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A LIFE ON THE OCEAN WAVE!



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Marshes of Polesie

Photographs by Włodzimierz Puchalski

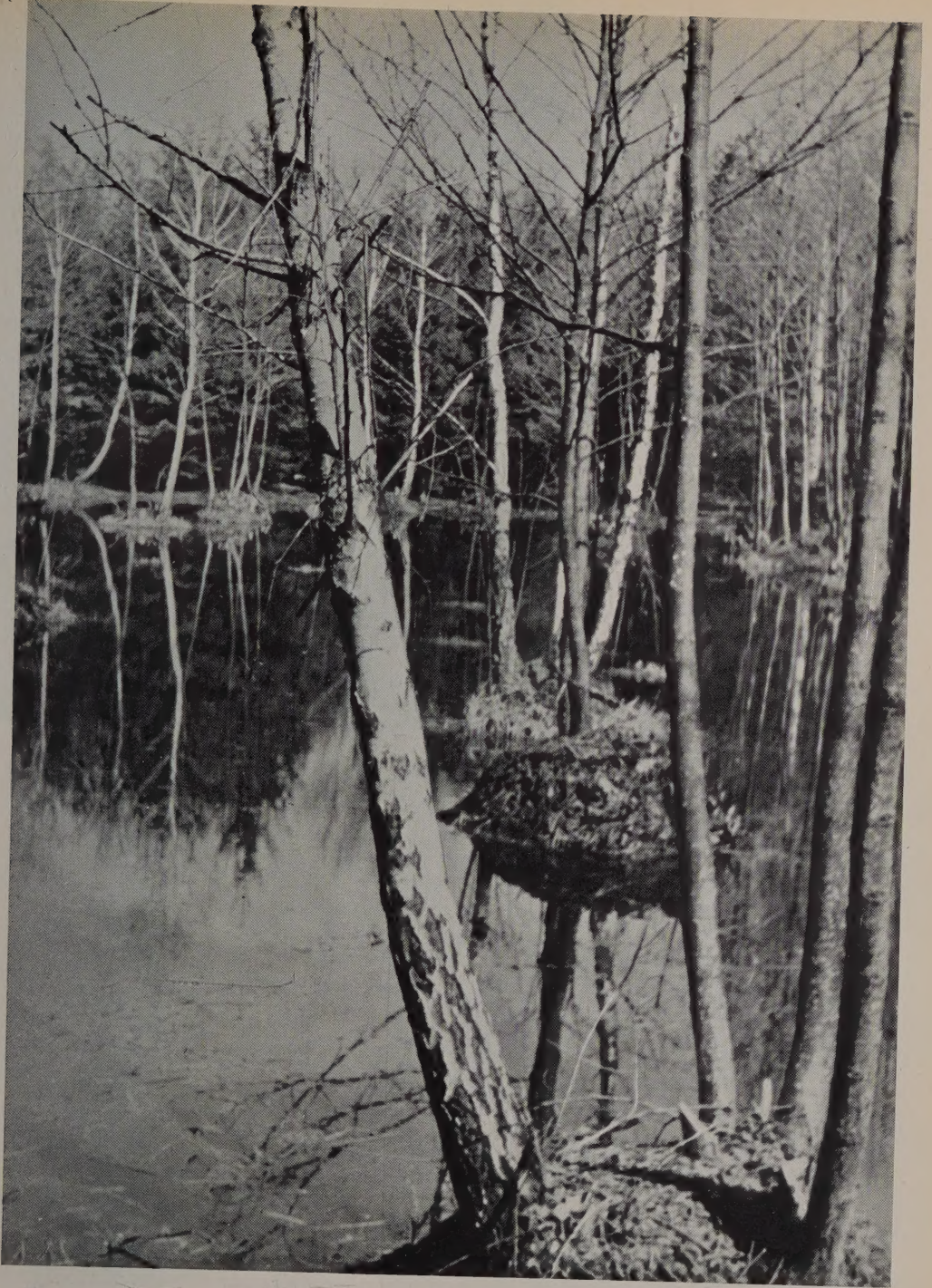


From the sources of the Pripiet to the eastern frontier of Poland, covering most of the province of Polesie, stretches a vast tract of marsh and forest, as large as the six northern counties of England. Canals and slowly meandering rivers link up the marshes, some of which extend to as much as 600 square miles. Here, as the wind sweeps over a scene of watery desolation and moans through the reeds, the mind is carried back to the battles of the Great War, when thousands of Russian and German soldiers were drowned in the swamps. But on a still summer morning, with the mist hanging about a rosy sunrise and the birds awakening to life, the marshes of Polesie are not devoid of melancholy charm



Polesie is rich in animal and plant life, especially in water-fowl and water-loving flowers. (Above) Wild geese starting out on a flight. (Below) Moonrise through a row of wild irises





The white clouds of high summer, sailing across the wide skies of Polesie—



*—and the water-lilies that echo their gleam,
break the monotony of the marshes*

The Indian Village

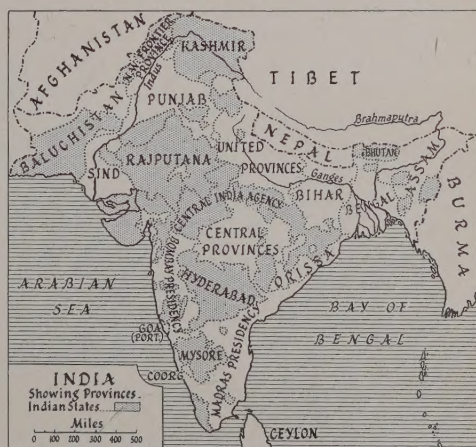
by SIR WALTER LAWRENCE, Bart., G.C.V.O., G.C.I.E.

Much has been said and written, by those who see life with a statistical eye, of the misery of India's rural millions and of the squalid, hopeless poverty from which the Indian villager can never rise. It is thus refreshing to find that another, less desperate view of Indian village life is taken by one whose long and varied experience of India entitles him better than most Englishmen and many Indians to express an opinion

IN the last few years bomb, gun and strident voice have bewildered thought and have cast a haze over our memories. Many of us have forgotten the controversy which raged around the greatest experiment ever attempted by this country—the laborious forming of a new Constitution for India. It was a big adventure to turn British India into democracies of a western pattern, a bigger adventure to link up 271 millions of recent converts to democracy with some 81 millions of people who had always lived in autocratic states. This Federation, the greatest the world has ever known, is on its way, and it is to be hoped that there will be no obstacles in the path. Some of our countrymen who had lived in India pleaded that the approach should be more gradual—that the vast land was figuratively a jungle with deep rifts of race, religion, language, castes, interests and civilizations; rifts very difficult to bridge, all tending to make democracy a dream and self-government a delusion. But our Parliament, with whom the decision lay, conscious of the blessings of our own system in this God-granted home of freedom and happy liberties, launched the new Constitution and it sailed East with the best wishes and the full sympathy of our people.

The success of this vast experiment will, in the last resort, depend on the capacity of Indians for self-government, and it cannot be too often emphasized that the overwhelming majority of Indians are villagers. I must not weary the reader with statistics, but briefly the population in India in 1931 was over 352 millions, and

of this 89 per cent is rural. More than a half of this vast population lives in villages with under 1000 inhabitants. Nearly one-third lives in villages with a population of under 500 persons. On the village, therefore, rests the great hope for self-government, and it is significant that both the present Viceroy, who holds the reins of administration, and Mr Gandhi, who holds the Congress Party together, are keenly interested in rural problems. The villages, in fact, cannot be ignored, and it is high time that the managers of the great experiment directed more attention to the village communities, with their ancient system of self-government, and less attention to the urban element which is only 11 per cent of the total population. For the village is the one stable factor, the one living germ of self-government, and the one institution similar and constant amid the startling dissimilarities



of British India and the Indian States. I was never 'urban' and was always more at home in the villages. They were to me the deep sea, the cities the foam on the shore. They were the real cement of Indian life and administration. And always be it remembered that the fine soldiers of the Indian army and the staunch, loyal men of the police forces came from the villages.

The villages are from time immemorial, the cities relatively modern, creations of the foreign invader, those by the sea the handiwork of the traders of John Company, those inland the proud memories of the camps of the splendid Moguls. Alike the cities by the sea and the up-country fortress palaces lived on the villages—on the patient toil of the peasantry; slow, frugal, industrious, virtuous and kindly. There are of course other cities which have sprung up, and grown from the needs of the civil and military administrations, from railway development, and from trade.

I always noticed when I was in India a strange divorce between the villages and the cities. I have more than once invited city folk to visit my camp in the villages, but they always refused. The lack of roads, the disinclination to ride, and above all the fixed idea in the towns that all outside was jungle, deterred my friends; on the other side the village folk dreaded the towns. A visit to the town was usually compulsory, caused often by a lawsuit. The Courts were open to all, but around the Court was a fringe of men in brief authority who all wanted something before the villager could pass. A visit to the Courts was always expensive and the simple villager often walked home with an empty purse and a sad heart. If he were fortunate and lived within easy reach of a road he might have ridden to the Courts in an ekka, a quaint contrivance on two wheels, jingling with many bells. Even that was expensive for his limited means, but at any rate he could gossip with his fellow passengers and smoke the 'hookah' passed from one to another.

When I revisited India last year, one of the great changes I noticed was the disappearance of the familiar ekka. I doubt whether the smart little carriages which have taken its place are less expensive to the villager. And then there is the motor omnibus. This may make a great difference in the relations of town and village. My observations led me to think that a journey by railway was by no means a joy to the villagers. There was too much regulation. But on an omnibus in India one can always argue with the driver.

Much has been done in late years to make railway trains more comfortable for the people, and when the peasants go long distances to the great religious fairs (Melas) or to weddings far away, they will perforce use the railway; but for lesser distances, where there are roads and motor coaches, the villagers will perhaps prefer them to the more rigid and regulated methods of the railways. But whether it be by rail or by road the pace has quickened and the change in pace may profoundly influence the lives of the villagers. Still, the vast majority are too remote from communications to be affected, and for a long time the pace of the villager will remain, as it has been from the beginning, the pace of the plough oxen.

Of course in this century there have been great strides and a sudden quickening of life and habits in the East, and modern inventions in transport and in wireless will perhaps do more than political reform, and endeavours in social betterment, to transform the Indian scene. And it is well to bear in mind that the peculiar characteristics of the nationalities of India and the striking contrast between India and the outside world are due to her former geographical aloofness, and lack of touch with the lands beyond the black water.

For centuries India, cut off by the sea and barred in by the mountains of the north, was quite content with the culture, ideas and philosophies which had come to



O. H. Borradain

India's 700,000 villages, in which all but 11 per cent of her peoples live, govern themselves through the ancient institution of the Panchayat—the Council of Five—the one institution similar and constant amid the startling dissimilarities of British India and the Indian States

Frances Hubbard Flaherty







her down the ages unchanging, and perhaps not a little scornful of others. Communications may, when more roads are made and railways extended, change manners, but I believe that the old simplicity and courtesy of the villagers will abide. I always remember one picture of the village attitude to mundane affairs, described to me by men who saw it from both sides. In the mutiny our troops and the mutinous regiments passed up and down the Grand Trunk road. The peasants on either side of the road were busy in their fields. They looked at the dusty, drouthy soldiers, and went on with their work. They were not interested.

The villager is not interested in anything outside his own village. He is not interested in the neighbouring villages; as a rule these are not more than two miles apart. I have known men who have never been outside their village except for a wedding feast. Then the attraction of an orgy of rice and sugar was too strong. I remember the case of a villager who had travelled by railway from the north and had seen Bombay, the sea and the ships. He came back a changed man, and in the opinion of the countryside, a queer and useless man. There is no love of travel for travel's sake. They go in their millions to the sacred places and enjoy the fun of the crowded fairs, and the more difficult and perilous the pilgrimage, the greater the merit.

There was one pilgrimage with which I became very familiar—the pilgrimage to Amarnath in the mountains of Kashmir. Old men and women and young children often perished by the way, and when I suggested that the mountain paths might be rendered less dangerous at a small cost, the answer was that this would rob the pilgrimage of its merit.

It may be asked what was the attraction of the village, why the outside world failed to allure. One answer was often given me, "Every bird is happy on its own bough", and I must confess that the Indian village

always attracted me. I lived in my tent outside the village, under the great shade trees. I was just a bird of passage and might never see the village again. But the village, despite its monotony, its squalor and sometimes its odour, had its charm and its beauty for me. My life in camp was the life of a nomad, and the village brought a solid sense of home, and quiet content. Outside were the crops of exquisite and various colour, the village pool where the buffalo wallowed in the muddy water just showing the tip of his nose, and above all there was the well, shaded by trees. The patient cattle turning the Persian wheel lifted the precious water to the little rills running to the thirsty crops. Always the droning music of the wheel singing of toil and hope. And the women carrying so gracefully the water-jars on their heads.

The well was the place: the well outside, and inside the village, the square. There you could see real life and hear true talk. Or if, when bidden, you peeped inside one of the village houses, you could follow the whole drama of an Indian family—the children, the mother and old relatives who all ate from one hearth. The house often had its courtyard, some refuge in the hot weather from the stifling hut.

I cannot describe the various styles of the villages in India. I am familiar with certain villages in the Punjab, in Rajputana, and in Kashmir; sometimes made of mud, sometimes of stone or brick and sometimes of wattle and bamboo. The illustrations to this article were taken in Mysore. I have seen villages in that beautiful country, but the style of the house varies in the different countries of India. The illustrations give the essentials of village life. The oxen (those of Mysore are famous), the plough, the grazing ground so closely nibbled—in Hindu India cattle only die of old age, and there is not enough grazing for all. Then there is that most useful of the village menials—the potter, but of course he comes after the scavenger, the master



O. H. Borradale

Frances Hubbard Flaherty

The human population of India presses as hardly upon the means of subsistence as do the cattle upon the closely nibbled grazing-grounds



'Old and serious before their time', the children of the cultivators begin early in life to share the responsibilities of their parents, herding the cattle and buffaloes and helping in the fields

worker, laughingly styled by the Moguls the Prince—the 'Mehtar'. He is indeed a prince of workmen, and were it not for his toil and skill, life would be short indeed in the villages, and the crops less abundant.

Like religion, sanitation is a question of latitude, and while we, who have lived in a temperate climate, are apt to criticize the weak points of Indian sanitation, we should make allowances. We should remember that the Indian sun is a grand scavenger, and the jackal and the pariah dog on land, and the vultures ever poising in the sky, do much to help. Great efforts are being made by our countrymen to guide the villagers into the way of sanitary progress, and no more noble mission can be imagined. It calls for heavenly patience and purpose. But as an admirer of the villages I would pay a tribute to their sweepers; for they work hard and thoroughly earn their share of the crops. They are a numerous people, perhaps the most numerous of the Untouchables. They have ambition and are social climbers.

The village tells its own story. Where it is large and compact, rising like a little fortress out of a sea of green crops, it suggests misrule and disorder; where the village is smaller and surrounded by tiny hamlets, the history of the neighbourhood has been peaceful, and the marauder has moved elsewhere. Yet in spite of the long years of strong government the marauder is still a factor in India, the criminal tribes are still criminal, and a weak administration is the signal for the Dacoits. The Thugs have been eliminated but the Dhatura poisoners succeeded them. There are hopeful signs that the Terrorists of Bengal will be led into the ways of peace. The villager has little to lose but his life, but his cattle are as dear to him as his life. Even now they must be driven back to the village at night, for certain tribes are irresistibly impelled to cattle-lifting.

The location of a village depends on the amount of cultivated land, the spring level of the wells and the rainfall. I omit all

description of that pride of British administration, its splendid irrigation canals. In the pastoral regions the area is sometimes very large, and the cottages are strung out over great distances. The cultivator and the plough cattle must be near their fields, and these are scattered here and there wherever a hollow in the land means moisture. Again in the hill districts the geographical conditions tend to the spreading of habitations. One often hears the legends of a Golden Age so different from the present Iron Age of India; then, no doubt, the village was spread out, but even in the Golden Age precautions had to be taken, as they are now, against the depredations of wild beasts. Everywhere in the fields at some distance from the village side are shelters for the watchers against the marauder, man and beast, and these little shelters grow in time into hamlets. These various factors, given security under a strong administration, create a tendency to spread out; and a tendency to migrate to the towns has grown with the growth of urban industry, which sets against the attraction of the mother-village the lure of money wages, despite the often miserable conditions of the Indian industrial worker.

The peasant cottages which I knew best and liked best were those of Kashmir, airy in the summer, but in the bitter winter of that snow-hemmed valley, kept warm by simple devices. The open lattice was glazed by oiled paper. The beautiful woollen cloth of the country kept the body warm, and underneath the voluminous gowns, men, women and children tucked in the little Kangar—a prettily shaped earthen vessel in a wicker-work frame, holding hot charcoal. I have shivered in the wet and snow, but the kindly villager would wrap a blanket round me and insert a Kangar, and at once I was in a glow. The sheep in the basement sent up their warm breath through holes in the floor and formed a perfect system of central heating.

But though I liked the cottages of

Kashmir made of wood, I was more interested in the cottages of the Punjab made of mud. Here, where the waters of the Five Rivers, and the rich silt that they have swept down from the ranges of the Himalaya, Karakoram and Hindu Kush, enable man to wage war with the desert, was the seat of a civilization vying in antiquity with that of Mesopotamia; and the mud cottages of today are the lineal descendants of those which, for 5000 years and more, have risen from and melted back into the fertile land. In her article on the discoveries at Mohenjo-daro in *The Geographical Magazine* for September 1935, Mrs Mackay indicated many resemblances between village life in the Indus Valley at the present time, and the conditions of the pre-Aryan culture which excavation has revealed. The need for communal action to obtain and distribute water, the need for concentration of dwellings to secure defence—these established in the dawn of civilization the type of compact village that specially interested me; perhaps because it gave me the sense of a people dwelling together in unity, that unity which all men of goodwill desire for India.

I had an Indian friend who was a great thinker and a distinguished writer. He often discussed my experiences in the villages, and later when I returned to India he wrote to me and said that the village was the keystone of Indian polity and that as Lord Curzon was a builder he should not refuse a stone that would become 'the headstone in the corner'. In other words he advised that care should be taken to conserve and strengthen the self-governing communities which have flourished throughout India, and still flourish.

I remember well, when I first started on the ever delightful camping-tours, that I was ordered by my official chief never to ask questions about the village Malbah—the village accounts kept by the headman, and his Panchayat, the Council of Five. The Malbah was sacrosanct. Many of us were charmingly inquisitorial, but the

peasants liked and encouraged our thirst for knowledge. Of course we never asked questions about the women, but every other subject was fully discussed by the camp fire or in the village square. Land, water, crops, cattle, food, clothes, money-lenders, debt (alas, always debt), the vagaries of local officialdom, and, as a night-cap, the superstitions and legends of the neighbourhood. As one of many such, when murrain fell on their cattle the Evil Goddess would be expelled by bell, book and gun into the next village.

The headmen in the villages are known by various names. In the north he is called Lambardar, a corruption of our word 'Number'. He is assisted by a council of five, and all that goes on in the village is settled by them, and in my experience, fairly and smoothly settled. It is not generally understood how little direct contact there is between the Government officials and the village. When once the Land Revenue has been settled, usually for a considerable term of years, the villagers, if they pay the Land Revenue and if they live at some distance from the roads, the Tahsils and the Thanas (respectively the subordinate headquarters of the revenue officials, and the police), can pass their lives securely and at peace.

There is a proverb in the East, 'If you live in a pond you should get on with your alligator', and in my opinion it is not difficult to get on with the Lambardar and the village Panchayat. But of course there is always the village accountant to be reckoned with and conciliated. He is known as the Patwari. If the Lambardar is lazy and weak, the Patwari may prove a danger. I have seen unspeakable cruelty and tyranny in one Indian State, but there the ruling classes and officials were of one religion, and the villagers of another. In this country the villagers were oppressed and robbed of all that they had. They became desperate and would not cultivate their fields. When I first went there state troops attended at ploughing time and



O. H. Borradaile

Upon the peasant cultivator, and the Land Revenue yielded by his holding, rests the imposing fabric of Indian government. Of fundamental importance, therefore, to village and administration alike, is the work of the Settlement Officer, whose duty it is to 'settle' for periods of twenty or thirty years—

O. H. Borradaile





O. H. Borradaile

—the land revenue which each village is to pay to the state and to decide, within that village, each cultivator's due. Even the most equitable settlement, however, may be thrown out of balance by the caprice of Nature or the exactions of the village money-lender

O. H. Borradaile





O. H. Borradaile

'In India village life has two or three thousand years of civilization behind it; and the grace, as well as the dust, of time is everywhere upon it.' Women as they weave—



O. H. Borradaile

—or winnow the grain display traditional grace in every gesture

forced the reluctant peasantry to plough and sow; worse still, these same troops attended at harvest time and helped themselves to what they wanted. Reforms were introduced and now honest industry smiles again in that fertile and lovely land. And here it was not the fault of the Lambardar and his Council of Five. They were helpless against the state officials. For the Patwari was of the same religion as the officials and was as deep a 'blood drinker' as any one of them.

I am no optimist, but if I had been an Indian I should have preferred life in a village to life in a town. I should also have preferred to live in an Indian State than in British India, for I like a congenial environment and dislike daily evidence of authority, however benevolent. It was not all idyllic in the village: there was debt and the even more enervating malaria. I

hope that some of the wealthy men of the East will contrive to remove that curse of India, and we know that it can be removed. There are other evils such as hook-worm, but I would stamp out malaria at all cost. I have seen this achieved in Brazil and in Malaya, and the classic victory on the Panama Canal is known throughout the world.

No praise is too high for those of our countrymen who have pressed on the healthy movement of co-operative banks to stem indebtedness—no praise too high for the devoted men who have given themselves to village uplift—their names will live for ever and the Indians are grateful for what they regard as unofficial or extra-official help. They regard official effort as a thing paid for—they take it for granted. But if you except debt and malaria there is much in the Indian



O. H. Borradale

The village potter—like the carpenter, the blacksmith, the scavenger, the leather worker, the water-carrier and the village constable—belongs to the menial class as distinct from that of the cultivators

village which is idyllic. It is said in the East that the three causes of evil are "Zar, Zan and Zamin"—gold, women and land. There have been fierce fights over land on the village boundaries; one sometimes hears of passionate crimes: there are goldsmiths and indeed gold in some of the villages, and I have known bad cases of children being robbed of their jewelry—robbed and murdered. But when 352 millions are concerned these evil crimes will happen. They never seemed to happen in the villages which I knew. Perhaps they were happy in their Chaukidar, one of the menial classes, who was the village's own constable and messenger. It was a source of pride to feel that the constable belonged to the village, just as did the carpenter, the blacksmith, the scavenger, the potter, the leather worker, the water-carrier and in some villages the washerman. They were part of the village community, not paid by the job, but by a fixed share of the crops. Others, such as the weaver, the oilman and the dyer, were paid by the job.

The cultivator is of a higher class, though he works as hard as the menial, runs greater risks when the rains fail and is responsible for the Land Revenue of his holding. His wife is a real helpmate. She takes the food to her husband in the field and often takes back some field herbs to vary the evening meals. She lends a hand at harvest time and is an adept picker of cotton. Even the children, when old enough, give a hand, and herd the cattle and buffaloes. They are old and serious before their time, these children, and become thoughtful too early.

It is a convenience to do one's shopping in one's own village with no thought of prices. The only things which must be bought are salt and sometimes chillies to give a savour to the unleavened bread—the universal Chupatti. I have been belated sometimes by rains and flood and always liked the taste and the smell of the

chupatti which the hospitable villagers gave me. Cloth, too, must be bought from outside, but where cotton is grown and where wool is plentiful the women and the weaver make an excellent cloth.

On the whole the self-contained village makes for comfort and content, and I should say there is more content in the villages than in the cities, more content in India than there is in Europe. I do not hold with some that this content is pathetic. I rather envy and admire this vast fraternity, this *Castra nil cupientium*. It was always a marvel to me how a handful of British civilians and an exiguous British Army could rule so peacefully and so cheaply the millions of India, far away from the centres of government and cantonments, and remote from roads and navigable rivers. The marvellous secret was the divine content of the villagers and the congenial atmosphere of the village. Small and humble as it was, it was self-governed. Those who have read Elphinstone and Maine will remember their appreciation of the 'Panchayat' which quietly and without ostentation guided the fortunes of the village. Of course, in famine, earthquakes, cholera and plague the great Sirkar, the Government, were forced to intervene. But when the calamity had passed, the cultivators, the menials and, as by magic, the cattle returned and the village went on as it had gone on for long centuries.

We have read of strange events in the Far East, but I hold that if the various governments in India deal fairly with the villages, avoid too sudden and too ambitious reforms, and leave well alone, the cultivator will still plough and sow, the women will go to the well, and peace will abide in the real India—not 'the land of regrets' but the land of modest industry and common sense, the home of a simple and fascinating folk, who know the value of self-government and ensue it.



Photographs by Frances Hubbard

Trained to perpetuate the most permanent authority in India—a young Brahmin priest







Religion colours the mind of the Indian peasant, and lends the power of the eternal—



—to the humble folk that have watched the rise and passing of a dozen empires







Sacred to the monkey-god Hanuman, ally of the hero Rama in an epic contest

The Fifty-Second Week

Impressions of Blackpool

by TOM HARRISSON

Everyone has now heard of Mass-Observation. Its initiators were two young men, Mr Charles Madge, a poet, and Mr Tom Harrison, a scientist who has been on four University expeditions. On his latest he lived for two years among cannibal tribes and afterwards wrote Savage Civilization. He is now directing Mass-Observation's survey of a northern industrial area. This survey included a summer's special study of Blackpool, and here he gives a preliminary and personal statement of part of its results. Many part- and whole-time observers co-operated, including painters and photographers under the general direction of Mr Humphrey Spender. (The full results will be given in a book by Herbert Howarth and R. Glew to be published in the autumn by Gollancz.) Anyone can participate in the work of Mass-Observation, which welcomes applications from would-be observers. Address: 6 Grote's Buildings, S.E.3

In summer, I think it is a noisy blaring town, I am sure it is only the visitors make it so.

You go on the sands for a change, and what do you find, a huge, seething mass of humanity, you try a walk on the promenade others think the same, and as a little amusement you go into the Olympia or any of these amusement arcades and find you cannot even get past the door.

Roads, Avenues, Streets, all are littered with paper pieces of sticky rock and such forth, even Stanley Park in the Rose Gardens newspapers are lying by grids, toffee papers on the grass and the hard-working man sighs wearily and begins picking up the rubbish, I should have backache. The birds and swans enjoy summer for the people throw them bread and that is what they like.

And:

Two young men, about twenty, watch the gulls. One throws a lighted cigarette end. Gull picks it up and drops it quickly. Youths laugh. Another youth then throws another end.

These are the observations, first, of one among some two thousand boys and girls who have written for me what they think of Europe's greatest seaside resort, secondly, of one among thirty-two whole-time observers who participated in Mass-Observation's study of Blackpool in 1937. The life and colour and vigour of the 'Mecca of the

North' is so vivid and varied that we shall need the whole of our forthcoming book on the subject to cover the field. But here I can give some subjective personal impressions of a preliminary sort. And Blackpool certainly is the place to get impressions.

The angle of the boy who has to live here all the year round should be significant. Here are from age thirteens:

(1) Everybody seems to come to Blackpool for their holidays. You would never think there could be so many people. But somehow or other, no matter how many people come to Blackpool, there is always room for them.

(2) In summer I think Blackpool is a very nice place. Usually it is very sunny and the weather on the whole is fine. There is always crowds of people outside and inside the places of amusement of these there are plenty such as the Tower and the Tower Circus.

(3) Blackpool prospers in many ways, first by the ratepayers who draw large amounts of money from their numerous trades, much money is foolishly spent by visitors in pleasure booths, but a great amount of people find work in these pleasure parks.

(4) After the summer holidays in Blackpool are over I'll be glad. The very first thing I don't like about them is when your down town or iether on the promenade you can hardly walk on the pavement without

being pushed of by a mob of merry-makers.

The second case about Blackpool is that there are too many accidents occurring, and when you want to cross the road you have to wait till a whole long line of cars have passed by.

(5) Really I think it would be better if no visitors come to 'Blackpool' in the summer, then I and lots of other children would be able to skate on the prom.

Indeed, these remarks correspond with the first impression of anyone who has not been warned what to expect. At times it seems that the whole town is moving, so great is the movement of crowded people within it. These crowds concentrate in small special areas of the town—the Sands, the Prom., the Tower, the Pleasure Beach, Olympia. These are people, nearly all industrial workers from sooted inland towns, who come here *for their single week's industrial holiday* (without pay) to breathe a new air and escape from the fifty-one weeks of clockwork-patterned life

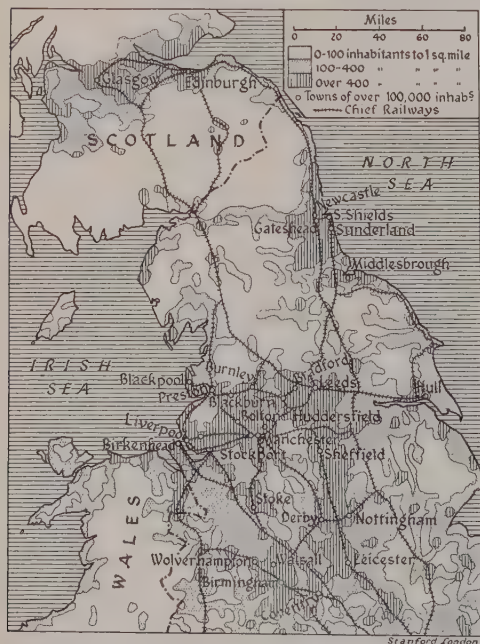
in which what one must do each weekday is fixed, and most of what one must not do each Sunday too.

Here, for one week, there are no noticeable police, no critical neighbours, no factory whistles. This, as many people clearly state, is Life, is Paradise, is Dreamland and Heaven, the place that makes it all worthwhile.

Each train and charabanc pours people into the gay, mad whirlpools, about which there is nothing black. Like sheep in a huge pen the charabancs cluster in the chara-park. The visitors change to walkers or take one of the numerous trams (2d. minimum fare), trams super-streamlined, trams like boats, a gondola tram; the latest thing in two-decker sliding-door buses; enormous Rolls-Royce taxis and old, old cabs and cab-horses. The oldest and newest constantly exist side by side in Blackpool, covering the whole range of human wish.

All along the front, the people are packed. Follow-studies show that many a holiday-maker spends the whole day drifting on the tide of humanity to and fro along the two miles of front, spending here and there a penny in some slot machine or side show, looking at many more. There are about a thousand alternatives from which he may choose his money's worth. Every yard or two a barker screams the wares: Ices, the Last Supper, Performing Mice, the Headless Woman, the Thousand Licks a penny, Guess your Weight, Penny faces as symbol of mystic Sheikism and when you put your penny in the machine and your hand on the sensitizer, desert colours flash across the back-set of the machine, a scene of The Sphinx and T. E. Lawrence. Don Cossacks parade the streets on horseback, wearing scarlet uniforms, as do the Corporation beach cleansers.

Typical is Professor Aubrey Winston Gray, one of the biggest draws in town; wearing a mortar-board and a B.A. gown, he lectures from a pulpit for 5-6 minutes,



Blackpool lures visitors from all parts of Britain, but its crowds come from adjacent industrial areas



From the top of Blackpool's famous Tower: the crowds are thickest near the promenade and dwindle towards the sea. The line of oyster stalls marks the boundary of the denser throng



Humphrey Spender

'Like sheep in a huge pen the charabancs cluster in the chara-park. The visitors change to walkers or take one of the numerous trams (2d. minimum fare).' Above are the empty charabancs; below, the people queuing up for trams

Humphrey Spender





Humphrey Spender

Humphrey Spender

A streamlined boat-tram passing an ornate lamp-post, part 'modernist' and part 'archaic', and a genuine old cab. Some people sample these conveyances; others dive straight into the familiar Woolworth's and there remain



But many use their own feet to walk for as much as eight hours a day, wandering along the sea-front, spending little or nothing, perhaps reading and re-reading newspapers under the artificial cliffs here illustrated



Humphrey Spender

From carts drawn by horses axle-deep into the surf, passengers embark on launches to inspect the famous 'Girl Pat'. Oysters are in season all the year round at Blackpool

linking science, industrialism and personal endeavour to the beautiful big Buddha on the altar below him. When he stops, there is a rush for his horoscopes and lucky-token Buddhas. Another famous figure is the herbalist who juggles with bottles of liquid, a placid boa-constrictor wound round him. Herbalist shops are very numerous, the usual window sign being a stuffed alligator.

This wonderland is utterly unlike the inland, indeed utterly unlike Europe. It is the price England pays for industrialism—a price which is extending everywhere.

It is not remarkable that the largest of all side shows is the Big Tent marquee, with caravan alongside, of Pastor Jefferies, Bethel-Evangelical Four-Square Revivalist.

Here each evening the dark little Welshman with the beautiful voice moves the sick to miraculous recoveries, the sinful to conversion, the whole throng into a simple hysteria by his persistent use of a small

piece of white paper to represent the Mantle of our Lord and Saviour. Nor is it out of line with the whole pattern that Jefferies had on his tea-table a jampot from which, when opened by the convert taking tea, pops a large cloth-snake jack-in-the-box.

In his one week of 'freedom' in the year the worker of Lancashire and Yorkshire or Glasgow comes here to escape, to get out of the rut of time and money and limited leisure of life in his home town. In Blackpool he sees in the flesh those whom he hears for the rest of the year—Reginald Dixon at the organ of the Tower Ballroom, George Formby in 'King Cheer' at the Opera House, singing:

Over there in India a Hindoo resides,
Smoking his hokum all day,
Opium and bits of rope and fag-ends
besides

The man from the east Whitechapel way:
He's got a lovely palace on the beach,
He's a Hindoo Howdo, Whodo Youdo.

Dead culture-heroes are perpetuated in wax, biggest lettering and star item at Lois (no relation to Madame!) Tussaud's being India's Buck Ruxton and his murder-house furniture suite.

"If I'm more than Four Pounds out . . . Autophoto . . . Penny a look for this telescope for the *Girl Pat* the *Girl Pat* she was a bad Girl is a good girl now there she lies in the billow of the Bay lads see the shell-marks on the side where the warship shot 'er. . . . Stop a moment folks and the Professor will cure all your troubles with his mystical medical knowledge. . . . Fish and Chips Fish Fish and Chips. . . . Our Practical Jokes are the best on earth. . . . The Cow with Five Genuine Legs. . . . Oysters Very Best Oysters. . . . Fire-Eating Arabs seeing's believing see the Arabs for yourself. . . . Going now the Train to Fairyland hurry ladies and gentlemen the train is leaving for Fairyland all one class one fare to Fairyland."

THE 'BEACHES'

Barkers dressed often as sailors, often as sahibs. Wearing his solar topee, one patters fluently into a microphone outside: "The Mystery Dr —? Oriental Wonder, see him behead the beautiful Western Girl"; while 'the original Galli Galli Man' performs crude tricks with dirty hanky and sword to draw the crowds into the front of the booth. The motif of sea and land, east and west are inextricably confused. On the sand a great teapot serves refreshments, while the name Central Beach refers only to the tangle of pleasure shows on the prom, and Pleasure Beach refers to Ember-ton's shining white permanent Wembley of Great Racer and Grand National, the Whips, Bugs, Bombers, Waffle Stalls, Cokernut Shies, Darts, Ice Rink. The trams are ships of land. Over the inland pleasure zone of Olympia towers a pseudo-lighthouse. Inside the inland Winter Gardens, the Spanish Galleon Restaurant is a piece stolen from history. The ferro-concrete Indian Theatre relates to the

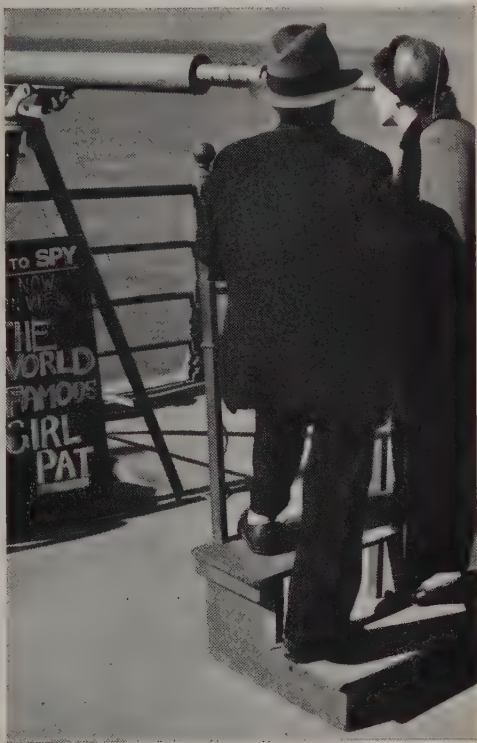
Sharma Yogi show, where a sort-of-sailor and a sort-of-sahib usher in guests to look at an Indian lying on nails.

In Blackpool the Corporation has slowly moved the seaside-idea inland, where it pays better, for the sands are free and do not encourage spending, so that the sea itself is now only the most obvious reason for people coming to Blackpool. The Blackpool position has been well, if unsympathetically, put by W. H. Auden:

A ruined pharos overlooks a constricted bay;
The sea-front is almost elegant; all this show
Has, somewhere inland, a vague and dirty
root:

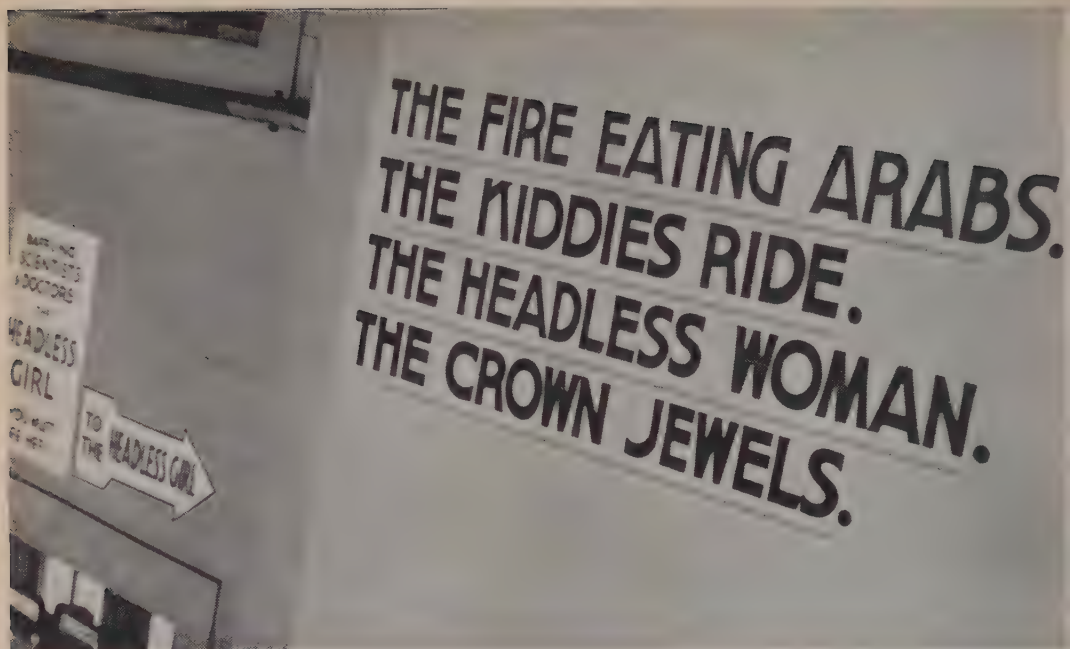
Nothing is made in this town.

He wrote this about Dover; the pharos is not ruined in Blackpool—it is evergrowing.



Humphrey Spender

It costs 1d. to look at the 'Girl Pat' at anchor far offshore. Maybe you will see the shell-mark on her side. Maybe



Humphrey Spender

All the wonders, errors and horrors of humanity are offered to the holiday-maker: everything regal or unbelievable or impossible. Any girl lucky enough to lose her head can draw the crowds!



Humphrey Spender

If seeing's believing, then for tuppence you can get a minute alongside a cow with five legs



Humphrey Spender

The gypsies were partly responsible for Blackpool's success; they are still very important as magicians and fortune-tellers. This one noticed the Mass-Observational camera and so did a little palmistry



Humphrey Spender

Yogi, hermit, dervish—these flourish in the one week of escape from fifty-one of industrial reality

How far does the worker escape? There are few clocks or time-reminders in Blackpool, but observation showed that the amount of looking-at-watches or asking-the-time was tremendous; average about three times an hour. And the landladies have imposed a daily routine of meals to be eaten exactly on time—not the same as inland meal-times—but doors are often locked at eleven o'clock, which leads to wholesale indigestion on the second day of each new week's batch of holidayers (Northern holidays are staggered), thus a rush on salts, chemists doing good business. Time is repeatedly referred to in conversations too. So are home and children; and often the train or charabanc arrangements for going home are being made on the second day of holiday. This is accentuated by the fact that many married couples have been unable to afford to bring their children too.

We have much information on this, of course, in the inland town where we have been working on Mass-Observation's intensive survey for over a year now. There, for every three working-class people who go away, two stay in Northtown for their holiday. Out of a sample of 700, the average amount saved (through numerous clubs, etc.), by the saving which starts in a big way every New Year, was £5 (minimum 10s., maximum £9). On £5 a family of four can hardly have a week's whoopee! And of course the larger the family the harder it is to get away. Many families regard the holidays as just a week's compulsory stoppage from work and wages. In Northtown, during holiday week the shops are shut and the streets look empty; but go down the 'backs' and see the kiddies.

Young workers are learning to focus the whole year around this week's escape. When they marry, children tend to be a threat to this main happiness.

The money worry is always present in Blackpool. Towards the end of the week many cannot afford to do more than stare

at the rotary merchandisers and read the acres of solid advertising.

The escape is far from complete except with the younger workers. They have no worry or obligation. In bands they sing the *Lily of Laguna* and swing along with linked arms wearing lemon-coloured paper jockey-caps labelled 'Narkover' or 'Come up and see me some time'. In the evening, however, many seem to need to escape into drink. Under the surface of gaiety and roar, the escape is not a total success. But there is perhaps nothing else in Western civilization more successful.

MECHANICAL LAUGHTER

The tone is set by the hysterical and everlasting laughter of the Big Clown with the little clown on his knee in the glass case outside the Fun House. Sometimes the gramophone record goes wrong, but the clowns continue to be convulsed with rhythmical shudders of physical, gigantic, silent mirth. People come and simply stare at this and then suddenly, uncomfortably, laugh; and smaller clown-fry laugh mechanically—some dressed as pirates—all over the front. Behind this King of Mirth the letters that spell Fun House revolve and flutter. One shilling to enter, spend as long as you like inside, once you have passed the initiation rites over rollers, dropping boards, rocking barrels, draughts of air suddenly up female skirts, with a living clown smacking your posterior with a rubber truncheon (relic of the traditional string of sausages). In here there is every sort of shaking machine to whirl, drop, hurl you. The Social Mixer treats everyone the same as whirling roulette balls in a deep bowl.

There are three principal pleasure types on the Pleasure Beach—making a fool of yourself, making a fool of others, and doing the impossible. You do the first in the Fun House, as in the Hall of Mirrors where you flounder hopelessly lost in glass and the outsiders look on and

To break down dullness, to make us feel ready for any pleasure, the automatically laughing clowns outside Fun House, Tussaud's and elsewhere laugh and laugh—

Humphrey Spender



Humphrey

—until others are compelled to laugh too, to relax from Sunday behaviour into Saturday whoopee. Children often spend minutes at a time gazing in wonder at the mechanical, hysterical clowns



Humphrey Spender

Humphrey Spender



Many working people have to save all the year for this one week's holiday. Even then they cannot afford to pay for pleasures all day long. Time must be spent looking at things, gazing down at the ever circling prize-objects on the rotary merchandisers—

—or doing mathematical problems of winning chances on the penny-luck machine



Humphrey Spender

Attractive girl. She is paid to sit there and attract. Masculine fellows impress by putting plenty of pennies into her employers' slot machines. Or you can put balls into the mouths of the hungry-looking clowns below, and if they get high marks, perhaps win a model monkey

Humphrey Spender





Humphrey Spender

The back of Noah's Ark, with animals going past on the revolving belt. Wooden ark, brick chimney—and radio, not much use in the Flood as there was nobody else to listen

enjoy. The second type is provided by the ducking-stool, for instance. You throw a ball and if you hit a bull the high-perched middle-aged man falls into the water. Or (of special interest to me) by the Peeping Toms who poke their heads over a wall to snoop on two lovers in the foreground. You throw balls to hit the heads.

This type of pleasure often finds outlet in assault on imitation bosses; the dummy policeman which was once put in one of the bump-cars was smashed up by the living drivers of the other bump-cars in no time. Now they only have each other to bump as usual; and this links into the 'impossible' type of pleasure where he who has no car to drive can yet indulge himself freely and drive to kill; where on the great racers you fly over enormous curves of danger called 'Becher's Brook,' etc., the girl holding you and screaming on the

edge of death. Death is of interest all over Blackpool, and along with serious physical disability provides the principal topic for jokes in the eight musical shows of this health resort. Also of 'impossible' type are those many shows that take you to another world, the Ghost Train which attracts from afar by the eerie skeleton dangling, disappearing, dangling, in a high glass tower with flames of light eating upward; the Magic Grotto where an orchestra of animals, including hippo, jumbo and chimp, musically compel one to get on a car and go inside (6d.). Always in such shows ordinary is mixed up with supernatural; the pixies in Fairyland mine coal! The Tower is the supreme symbol of Blackpool. In a recent Northtown tea-party of ours, when asked to draw Blackpool, each and every child (all ages) independently drew the Tower and the Tower only. It is in one sense a substitute factory-chimney

which is needed to sign the skyline as genuine, but which all can rely on never to smoke.

B.C. 1938

Again, the Noah's Ark which rocks to and fro as if at sea, just beside the gold and white minareted 'Casino', has animals of all sorts rotating around it, Mrs Noah (with rolling-pin) and a giraffe active in the windows, and a long-bearded patriarchal policeman raising and lowering his arm to regulate the animal flow. Inside the Ark, entered under moving powerful fangs, there is an elaborate network of tiny dark passages with hoaxes, distorting mirrors, a donkey's tail that hits you in the face, etc.—you are in personal degradation again, paying for ten minutes of extreme discomfort. And once you have entered you can't go back.

Under the Tower are real animals in its zoo; they are almost entirely either man-like animals or large carnivores, often suit-

ably emphasized (irrespective of accuracy) as rare, oriental, exotic or savage.

Real animals are rare elsewhere in Blackpool. Nature is not important. There is no tree anywhere along the front or town centre; swallows' nests are raked out, too messy. The escape is not from factory to Mother Nature, but from A.D. 1938 to B.C. ditto, with every modern convenience of science except the scientist. But donkeys are outside time; we find them still numerous on the beach. There is a deep-rooted northern belief that donkeys are immortal. Thus a donkeywoman talks to an observer:

Donkey, cost from £5 to £14, little ones £3. They eat corn, mealy bran and oats. Working life: 20 years. She "loses one or two every year." She says: "People say you never see a donkey die—well you do." She lifts the saddle and points: "There, you see the cross of our Lord Jesus on its back." She points then to another mark she sees



Humphrey Spender

The letters of the name Fun House wobble round crazily, proclaiming crazy games and practical jokery within. You can spend all day being fooled or foolish. Specially recommended: the Social Mixer



Humphrey Spender

The Casino, like a mosque with Methodist influences, is not really a casino of course, only a classy restaurant. Next year it will have been replaced by something more modern, more like—



Humphrey Spender

—this, the sort of exotic stuff we tired workers need. Note human skeleton in glass tower

on the ear, saying: "This is the thumb mark of Jesus. You see, our Lord rode on one—so you must never ill-treat a donkey."

There are generally about fourteen groups of donkeys on the main stretch of sand; a ride costs 4d. children, 6d. adult, 2d. extra to be photographed on one. Typical donkey incident:

The donkey man is energetic in seeing that his animals canter. One woman rider shrieked: "Oh, don't let them gallop"; but he grinned and gave them a darn good whack—and the donkeys galloped. The other woman bawled: "Give her donkey a reet good crack." He did so; the donkey did not respond. The woman, apparently disgusted: "Lump sugar wouldn't tempt that bloke." The donkeyman runs after it and gives it a whack; no apparent effect. A woman onlooker says: "Look! He's knocking hell out of it—and yet it won't run." Two small boys come up, and their mother says: "Are you warm, love? Aren't they lazy? They wouldn't run."

The sand is the children's main pleasure, centred on castle-making and Punch and Judy. Less than one per cent of adults bathe in the sea. Many never go on the sands at all. Sea-bathing is not Blackpool, though largely from sea-bathing arose Blackpool's mighty power. But to the children the sand is still vital; many collect sand in paper bags to treasure inland. The adults take home mostly the exotic Blackpool rock, extraordinary sugar objects called 'May's Vest' and 'Sally's Whatnots', postcards of fat women, souvenirs with the Tower trade-mark.

ILLUMINATIONS

The people go away with lots of fuss and hustle; in general they arrive quietly. In the end of September the holiday rush slows. Then the year is marvellously extended by the light in autumn of 'Illuminations', switched on by royalty, featuring mainly fairy-tale mythology scenes, jugglers and tumblers also and the Blackpool



Cinderella's magic coach



Midnight: home, Cinders!



Entering the Rejuvenator



Joke yokel and joke moke
Humphrey Spender



Humphrey Spender

Over all stands Blackpool's landmark and trademark, the Tower: to more and more people every year the symbol of health and pleasure, of 100 per cent Good Fun and Progress

Rejuvenator Machine which takes in illuminated old people and turns them out the other end as illuminated young people. Brilliant tableaux wall off the dark sea behind; the piers are ill-lit, but have searchlights sweeping to land. Huge blue-birds flutter over the road, avened with pillars like piled clown-caps. The Mayorial Car is a wonderfully lit gondola. The porch of the Town Hall is floodlit, a superb bank of flowers around the feet of a less superb statue of Queen Victoria. Over the porch flashes Blackpool's motto:

PROGRESS

1867-1937

Time marches off. . . !

Winter leaves the front empty; the

children exhausted from sleeping at any hour, any place—Blackpool in summer is largely overcrowded, and many visitors sleep in bathrooms; queues lengthen at the Employment Exchange. As one boy wrote to me:

It would be better if they had less public-houses. Blackpool is gaining more every day, more laws come out it is learning more. It would make a big difference if they pulled down all the old houses and also those stuffy little amusements it would be more healthier, if they were like the Plaesure beach, they would be surtinely better every thing is in open air, instead of smelly stuffy places.

Although we have bad points we are good point its a very busy place it is good for health and it takes a very lot of mony during summer season.

The Great Barrier Reef

I. Australia's 1200-mile Breakwater

by VANCE PALMER

Two Australians, Mr Palmer and Mr Roughley, describe this month one of the most remarkable features of their remarkable continent: the Great Barrier Reef. With a few broad strokes Mr Palmer sketches the vast panorama presented by this chain of living and dead coral; its place in the life of one of the greatest English navigators; and the curious marine industry that it sustains; while Mr Roughley paints in detail some of the stranger and more beautiful among the 'things creeping innumerable, both small and great beasts' that swarm in its coral gardens. For a full account of these, our readers are referred to his book, Wonders of the Great Barrier Reef, illustrated with colour-photographs of which we are able to publish a selection through the kind co-operation of the publishers, Messrs Angus and Robertson of Sydney (London agents, The Australian Book Company)

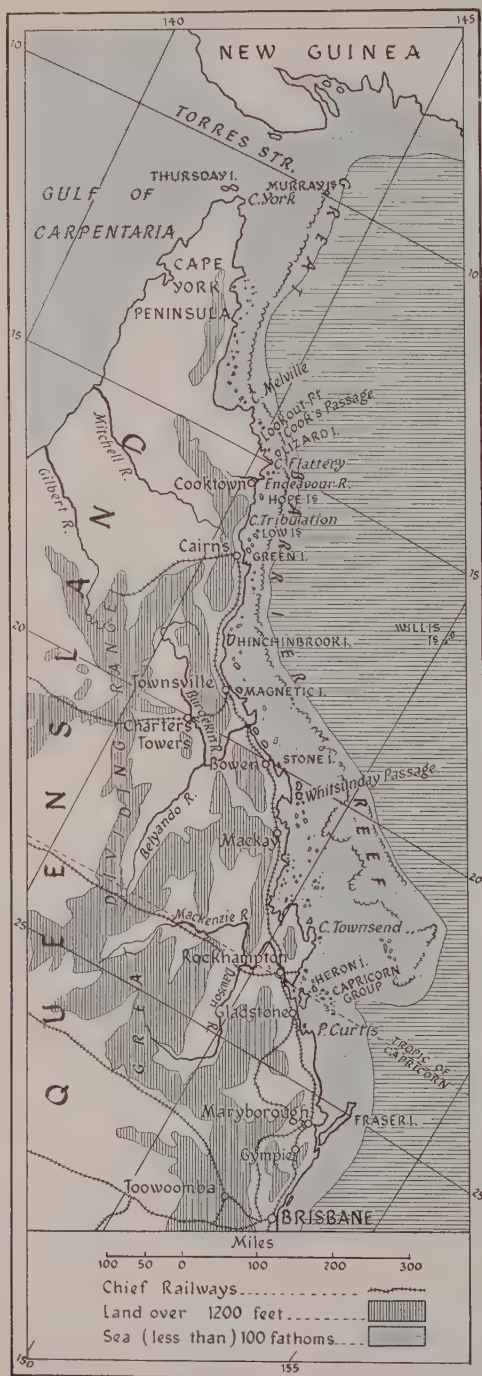
ENTERING the waters of the Great Barrier Reef from the south, the first object one notices is a lighthouse with a small trim steamer lying in the offing, apparently at anchor, a little to the east of the usual track of coastal vessels. On a day when the south-east trade-winds are whipping up lively seas the stillness of the steamer seems ominous. It is, in fact, the shell of the s.s. *Cooma*, which ran aground in August 1926, and until it is broken to pieces by the seas it will remain as a warning to navigators that they are approaching one of the most difficult reef regions in the world, where the slightest miscalculation may mean disaster.

The Great Barrier begins tentatively in these detached reefs on the tropic of Capricorn and runs for over 1200 miles up the Queensland coast, ending in the Murray Islands south-east of New Guinea. At the southern end the main wall lies at a distance of over a hundred miles from the coast, verging inward as one moves northward (at Cape Melville the channel is barely seven miles wide), then taking an outward sweep again. But the term 'wall' is, after all, a misnomer. The Great Barrier Reef, as a visitor to it gradually discovers, is not the complete breakwater it looks on small-scale maps. It is a series of coral structures in process of growth, consisting of underwater reefs, reefs submerged only at high tide, exposed sandy

cays, treed atolls, with intricate passages between that give outlets to the open sea. Only in the northern half does it take on the character of a true breakwater, and for about six hundred miles presents an unbroken front to the Pacific swell.

The outer building marks the edge of the old continental shelf. Inside it there is comparatively shallow water, varying from twenty to thirty fathoms, a long lane, studded with little islands, through which shipping passes between the southern Australian ports and those of Asia. Traveling northward, as Cook did on his famous voyage of discovery, one is not immediately conscious of being inside a great barrier. There is not, for instance, an idyllic calm, for the south-east trades that blow up the line of the Reef for eight months of the year create short, choppy seas that may be mistaken for the ocean swell; and the variegated islands have the character of the adjacent mainland, here arid and infertile, there blossoming into tropical jungle where the soil is volcanic and the rains heavy. They are, in fact, mere peaks of an older coastline, these islands, though most of them have coral reefs in a horseshoe on the north-east side if they are far enough from the land to resist the destructive influences of the fresh water pouring out of flooded rivers.

One feature they possess in common. The south-east side that faces the trades is



uniformly bleak and scoured, even when the islands lie in regions of heavy rainfall and luxurious growth. This is to be noticed markedly in Hinchinbrook, the largest and most impressive of them all. On the outer side it is a rocky escarpment, rising almost sheer from the sea to a height of over three thousand feet, but the inner side that faces the mainland is a wall of impenetrable jungle, streaked with the thin silver of waterfalls. Though only thirty miles long by a few miles wide, this island may still hold its secrets for the naturalist in the form of some marsupial that has since disappeared from the parent mainland. Its narrow area of steeply cascading jungle is about the least accessible region of the continent. I have camped on the fringes of the island, but I know of no one who has really explored it.

North from Hinchinbrook the true reefs come closer to the mainland, partly because the submarine platform is narrower, partly because there are no great rivers to check, with their periodical overflow, the growth of coral. For, as I have suggested, fresh water means a quick death to the coral polyp. There are examples, such as the disappearance of the fringing reef on Stone Island, near Bowen, that show how one mainland flood can undo the work of centuries. In 1918 two cyclones, following one another almost immediately, brought an unprecedented downpour in that region, a total of thirty-six inches of rain falling in eight days. The volume of water carried down by the coastal rivers was tremendous, and in this particular instance led to the total destruction of a growing reef. Where there had been vigorous colonies only some acres of dead coral remained.

In a minor way the same influences can be seen at work all the way up the channel. The coral is invariably poor in the proximity of rivers; it flourishes in the middle regions, where it is safe from the ravages of fresh water on the one hand and the force of the outer ocean on the other. One can best picture the Reef as a broad,



F. N. Ratcliffe

The islands that line the inner edge of the Great Barrier Reef are peaks of a submerged coastline, clad with pines in the south and tropical jungle further northward. Dangerous reefs stud the adjacent waters.
(Above) Two wrecks off Magnetic Island. (Below) Rugged scenery near Whitsunday Passage

By courtesy of the Agent-General for Queensland





Prof. C. M. Yonge

On their north-east side, where the destructive influence of fresh water is less felt, most of the coastal islands are fringed with coral reefs, broken and crumbling above high-water mark

irregular line of living growth with dead fringes on either side.

It is important to emphasize the word 'growth'. The Great Reef has such a fixed look on the charts that it is easy to think of it as static, to the degree that a range of mountains or any other natural feature can be called static. Only intimate acquaintance changes this view of it. For a year I camped on Green Island, a little atoll on the inner flange of the Reef, and, imaginatively, the experience was something like living in an ancient city that was still in process of development. The atoll itself was one of the older coral structures; it had been long enough above the surface to have a complete encircling reef of its own, an inner lagoon, a growth of tropical jungle. But within a day's sail were reefs in every earlier stage of growth. Upolo Bank, a few miles to the north, had a surface of bare coral sand. At Oyster Cay, still further north, the coral sand was covered with a thick mat of wire-grass that

would in time form sufficient humus for plant-life. Sprinkled about the skyline were reefs perpetually above water but as yet mere expanses of broken coral, not yet crumbled into sand: reefs submerged at high tide; reefs that had not quite reached the surface. That was a typical cross-section of the Great Barrier.

And though the creation of these reefs has been a laborious, age-long business, the growth is not so slow as to be imperceptible. Pushing upwards and outwards at the rate of something like two inches a year, the coral colonies have an unsettling effect on navigation. This can be illustrated from the wreck of the British-India liner *Quetta*, which in 1890 struck an uncharted rock in Adolphus Channel and sank within three minutes, over a hundred passengers being drowned. The charts of this channel had been prepared from surveys carried out from the time of Flinders onwards, and it is the opinion of authoritative people (among them Dr Saville-Kent)



T. C. Roughley

Eastward lie the true coral islands that have grown up gradually from the sea-floor and the innumerable reefs which, approaching the surface, are exposed to the air and die



T. C. Roughley

An extensive area of delicate, many-hued staghorn coral bared by a spring tide

that the coral responsible for the wreck had grown to a height dangerous to shipping since the particular area was sounded and surveyed.

COOK'S FAMOUS VOYAGE

But if navigation is uncertain now, even inside the regular steamer routes, what tributes must we pay to Cook, who, in 1770, took his *Endeavour* through the whole unknown length of the passage? He does not seem to have recognized he was inside a barrier till about half-way through his course: he was preoccupied with the line of the coast, and it was only the appearance of cays like Green Island that made him aware of the dangers that surrounded him. From then on his handling of the *Endeavour* was a masterly example of care and seamanship. He struck a reef near a point named Cape Tribulation ('because here began all our troubles') and after some difficulty in getting his vessel off, limped into the Endeavour estuary a few miles further north. There, after beaching his boat and overhauling her, he was faced with a problem. From Grassy Hill above the river-mouth he could see nothing but reefs and shoal-water to the north, yet he could not turn back because of trade-winds blowing steadily from the south. He determined to creep cautiously on, feeling his way. At a point north of Lizard Island he actually found a passage (Cook's Passage) leading through the main reef to open sea. But after a couple of days' sailing northward he was becalmed and in such desperate danger of being driven on the terrifying wall of the Outer Barrier that he was glad to take the chance of a mill-race passage into the sheltered waters again. Ceaseless care, assisted by luck, allowed him finally to pass out through Torres Strait in the north.

That famous voyage of Cook's, recorded so intimately in his *Journal*, gives an historical depth to the bright cays and blue waters of the Barrier. Most of the natural features were named by Cook, and today

they remind us of his changing states of mind—Escape Reef, Cape Flattery, Look-out Point, Hope Islands. Speaking personally, I can say that the little atoll on which I was camped held added interest for me through Cook having named it Green Island 150 years before. It must have been the first real coral structure he had seen along the coast, and though it was not covered with coconut palms, as now, the brilliant cover of its tropical jungle would have contrasted markedly with the more sombre green of the pine-clad islands to the south.

About twenty-five miles to the north lay Low Island, which was used as a base by the British Barrier Reef Expedition of 1928-9, under Dr C. M. Yonge. It was the aim of this expedition, which consisted mainly of biologists, to study the life processes of corals and the formation and maintenance of reefs; but it also contained a geographical section, and a few semi-attached scientists whose function was to investigate avenues of economic development. These are not great, for trawling is impossible in such coral-studded waters, turtles are only plentiful at the northern and southern extremities, and pearl-shell is poor and scanty; but for many years luggers, skippered by Japanese and manned by islanders, have been combing the reefs for trochus and bêche-de-mer, and the combined value of these products reaches something like £100,000 annually.

LUGGERS OF THE REEF

It is the activities of these luggers that gives an aspect of life and movement to Barrier waters. In April, at the end of the short cyclone season, they come sailing down from their base at Thursday Island, turning at the southern end of the Reef and beating slowly back with the help of the winter trades. Trim, smartly rigged vessels, they are shallow in draught so that they can penetrate the coral network without risk, and usually they carry a crew of twenty or so—skilled islanders, equally at



T. C. Roughley

Seeds brought by birds germinate as humus slowly forms on the coral islands. Many of these are covered with thickets of pandanus palms, supported in shifting sands by their stilt-like roots

home in the water or at handling sails. The work of gathering trochus is mainly carried on by naked diving. At some selected spot the lugger anchors and each down the dinghies are lowered, four men to each boat, scattering about the reefs wherever shell is to be found. The trochus itself is a large sea-snail that feeds on algae in the shallower parts of the reef, and the shell is used for making shirt-buttons. Since the war this craft has developed into an important home industry in Japan, families owning their own machines; and the trochus has largely ousted the more expensive pearl-shell.

Gathering *bêche-de-mer* has a slightly different technique. The slugs lie scattered about the reefs at the depth of a fathom or two, and the boats row backwards and forwards, one man in the stern searching the sea-floor through a water-

glass trailed behind. In his hand he carries a leaden weight to which is attached a small, barbed spear, and it is his job to transfix the slugs he sees and haul them aboard. Black, dirty-white, brown, pinkish, they vary in colour and value, averaging about a foot in length and a couple of inches in diameter. For long they have been regarded as a delicacy in China, where as trepang they are used as a basic flavouring for soup.

At nightfall the boats row back to their parent luggers and the work of curing commences. For these luggers, so graceful in line, so beautiful in motion, are really floating factories and are best admired from a distance: the strong smell of Asian fish-markets seems to exude from their very timbers. The *bêche-de-mer* are boiled for twenty minutes, split lengthways, and then laid on wire trays in the smoke-house,

where they are left a day or so to dry. By that time they have shrunk to the size of cocktail sausages and are hard as bone. Trochus has a simpler treatment. The shells are boiled, the meat extracted and flung overboard—to the great profit, it may be said, of all kinds of swarming marine life.

"If you want good sport," say experienced fishermen, "get in the lee of an anchored lugger; that is, if you can stand the reek."

These few and scattered marine industries of the Barrier give profitable employment to a large number of natives who, without them, would have found it hard to adjust themselves to advancing civilization. They fling themselves into the work of diving, gathering shell, handling boats, with a certain amount of gusto, for their traditional life has equipped them

for just such tasks. Racially they are a mixed lot, coming mainly from the small islands of Torres Strait, which have been a meeting-place of adventurous sea-goers for centuries. Among the crew of a single lugger you will notice features that hint at Melanesian, Malay, Polynesian and Australian aboriginal blood; and sometimes the boys have no common tongue but pidgin. I have heard it said, indeed, that the Japanese skipper usually takes care to select as mixed a crew as possible; it is easier to exercise authority over natives different in racial origin.

But the Japanese skipper, that autocrat who figures so prominently in many of the lugger-boys' songs I have heard, is likely to become, in the near future, merely a memory of less happy days. For some years the policy of the Queensland Government, which controls the islands of Torres



T. C. Roughley

Fishing on the Barrier begins in April after the cyclones, when luggers, manned by native crews, comb the reef for pearl-shell, trochus and bêche-de-mer. A lugger at Low Island



Prof. C. M. Yonge

Trochus shells, gathered by naked divers, are used for making shirt-buttons. These may be distinguished from real pearl-shell buttons by red, brown or green streaks on the under surface



Thiel Studios

Bêche-de-mer, 'sluggishly-animated sausages', find favour in China as a basic flavouring for soup

Strait, has been to encourage the natives to work co-operatively, and to this end it provides them with boats. These do not belong to the crews that man them, but to the particular island from which they are operated. At the beginning of the year a skipper is elected for each, and he has complete control, deciding when the boat will put out to sea and where it will work. The Government agent markets the catch, subtracting a small commission and also a portion of the initial cost till the whole is paid off; the remainder is credited to the crew and the native council of the island.

It is an enlightened policy and has already shown good results; it is likely to lead very soon to the complete economic independence of the 3000 scattered islanders. The gathering of trochus and bêche-de-mer is a comparatively stable industry, and already over thirty boats are operating under the new system. There is a noticeable air of independence about these boys who work co-operatively. I remember the pride with which one answered me when I asked him who owned the lugger then at anchor just outside the reef: "Nobody don't own that boat. We do ourselves."

There was no sign that they worked shorter hours than the others, or spent more time in their favourite sport—racing their small dinghies with lug-sails across the reaches of the lagoon.

FIGHTING THE CYCLONES

The work of the luggers is limited by the season. For eight months of the year (from the beginning of April till the end of November) steady trade-winds blow up the Reef from the south-east, allowing boats to run easily before them without the help of an engine. Then come light variable winds from the north, punctuated by calms

—treacherous calms holding in their stillness the threat of fierce cyclonic gales that may only rage in full fury for a couple of hours, but are devastating in their effect. The history of past cyclones is written in the immense coral boulders, torn up from the sea-bed and left on the plateaus of the Outer Barrier; in the wreckage of small boats that litters the upper beaches of many of the islands. Even fairly large steamers have come to grief in these cyclones, and (like the s.s. *Yongala* a few years ago) have disappeared without leaving a trace.

Usually the cyclones form in the great ocean wastes outside the Barrier and travel towards the mainland, where they are blocked by the Great Dividing Range and turned out to sea again. To mitigate their worst danger, their unexpectedness, a meteorological station has been set up on Willis Island, a small, isolated cay about two hundred miles east of the Reef's centre. From there messages are flashed to the mainland whenever a cyclonic storm is seen forming or approaching; red flags are run up at every post office; small vessels warned to take cover. These precautions have done a great deal to limit the damage caused by cyclones in recent years, and, what is almost as important, to reduce the dread of them which used to be a continual nightmare to men moving about these waters during the summer months.

But, apart altogether from the fear of cyclones, it is in winter that the Barrier waters are most attractive to a visitor. The cool trade-winds freshen the enclosed seas, take the sting from the sun's heat; the kingfish moving north in great shoals provide sport; the low day-tides leave large areas of reef bared for exploration. And scattered everywhere are luggers at work, their silhouettes giving a look of life to the skyline.

II. Coral Gardens of the Great Barrier Reef

by T. C. ROUGHLEY

It is July—midwinter. The cloudless sky provides a comfortable warmth as we lazily paddle our glass-bottomed canoe over the mirror-like surface of the reef. Half a mile away is our coral island, densely covered with a foliage of various shades of green, the more sombre green of the pandanus trees, casuarinas and tournefortias contrasting with the pale green of the tall pisonias. A wide stretch of coral sand, glistening white in the sunshine, separates the vegetation from the sparkling emerald-green water of the shallow lagoon. Beyond the lagoon the sea is a beautiful turquoise blue stretching to the horizon, hazy in the distance.

This morning we are exploring the bottom just beyond the reef edge, where the water is twenty or thirty feet deep. Here the coral, never exposed to the retarding influence of the air, never battered by waves churned up by an angry wind, is free to grow in almost limitless profusion, and it reaches a size never attained in the shallow water of the lagoon.

A NEW WORLD

As we gaze down into the cool green light of the liquid depths we are transported into a new world, and we gasp with wonder at the magnificence of the scenes below us. Here are gardens that might have been planted and tended by fairies, so strangely different are they from the gardens of our previous experience. Delicate coral trees, corals like giant mushrooms, corals resembling enormous fans, corals arranged in tiers like a Buddhist temple, corals infinite in their variety, pass by as we slowly and quietly move over the surface. Their colours are restful—rarely brilliant. A hedge of light-blue staghorn coral contrasts with one of reddish-brown; branches of lavender are thrown into relief by borders of rose-red. Here and there the coral shrubs are variegated; pale green stems tipped with

mauve-like buds about to burst into bloom; bright yellow branches tipped with blue; pale brown tipped with yellow. The shape and colour are limitless.

Wherever we look fishes, unaware of or at least undisturbed by our presence, swim lazily about the maze of coral growth, apparently proud of the beauty that surrounds them. Or is it pride in their own beauty? They have every reason to be proud, for Nature has embellished them with lavish prodigality. Small demoiselles, three or four inches long, adorned with a blue of wonderful purity, some with golden tails; others a uniform pale green of a shade rare in the world above. But not all the fish are small. We pass over many which anglers continually tempt with their lures; coral trout, brilliant scarlet broken with fine blue spots; red emperors of a pearly lustre with red bands in the shape of a broad arrow; sweetlips, iridescent silvery blue with blood-red markings on the fins and body; parrot-fishes arrayed in the coat of Joseph; and many others. Resting on the bottom we may see a giant grouper, several hundred pounds in weight.

Suddenly the peace of this happy community is disturbed; the fish dash in confusion to the shelter of the nearest coral and almost in an instant the whole population has disappeared. Intent on the beauty beneath us, we have failed to notice the approach of a huge shark which, silent and sinister, has slowly moved into this world of peace and calm, seeking whom it may devour.

ON HERON ISLAND

Such scenes as this may be viewed along practically the whole of the Great Barrier Reef; such scenes I witnessed many times during a recent two-months stay on Heron Island, one of the coral islands of the Capricorn Group. It is situated about fifty miles north-east of Gladstone, a township on the shores of beautiful Port Curtis, and



F. N. Ratcliffe

A wide stretch of coral sand, glistening white in the sunshine, separates the vegetation of Heron Island from the shallow lagoon, beyond which a turquoise-blue sea stretches to the horizon

on the track of the Brisbane-Cairns Railway. A large and comfortable launch leaves Gladstone every Friday morning at about nine or ten o'clock and the island is reached usually by about 5 P.M. Accommodation is provided for tourists and the visitor is made very comfortable. Heron Island is about a mile in circumference, thickly vegetated and surrounded by coral sand. Indeed, the whole island is composed of coral sand. It is enclosed by a shallow lagoon about a quarter of a mile wide at its narrowest part and extending for several miles at its widest. Beyond the edge the coral slope dips quickly to a depth of twenty or thirty feet.

During the winter the climate is ideal. For a whole month after my arrival there was never a cloud in the sky. The days were comfortably warm, and at night one and sometimes two woollen jackets were a necessity. During the summer the heat of the sun's rays is usually tempered by a refreshing breeze.

When the tide is high nothing but the island shows above the surface of the water, but at low tide the coral appears in irregular patches, the whole of the reef edge becomes bare, and one may walk over any part of the lagoon without passing through water more than about two feet deep.

Within the lagoon the visitor is often disappointed with his first introduction to coral life; he expects to find brilliant coral in profusion everywhere, like a garden under intense cultivation, whereas much of the coral, having grown to an elevation where it is exposed for long periods to the air, has died and lost all its original attractiveness. But it only serves to throw the living coral into greater relief. Here practically all the types which flourish beyond the reef edge are to be found, but in the shallower water they remain more stunted, though their colours are equally beautiful.

At low tide visitors, clad usually in shorts, a shirt and sand-shoes, may be seen scattered over the lagoon inspecting the

pools between the coral platforms, turning over coral, and examining the thousand and one objects of interest which every visit to the lagoon discloses.

COLOURFUL CLAMS

The most colourful objects of the lagoon area are the clams which occur in profusion everywhere and with wide-open shells display an expanse of their soft mantle edges arrayed in infinite patterns and colours, some unsurpassable for sheer brilliance, others more subdued and resembling the finest of velvet. Intense blues, purples and greens, or mottled combinations of those colours, are mingled with more subdued browns, fawns and greens. I have never seen a clam with a red mantle.

At Heron Island the largest clam grows to about a foot in length but in the northern areas of the reef clams of enor-

mous size abound; they may attain a length of three or four feet with a weight of several hundredweight. They are the world's largest shellfish and are reputed to have caused the deaths of unwary divers who, unwittingly placing a foot between the wide-open shells, have been gripped by the closing of the valves and held as in a vice till they drowned.

During very low spring tides many of the clams may be left exposed to the air, and even then some may be seen with their shells agape, but the majority remain closed till covered by the succeeding tide. As the tide flows off the reef it is not an uncommon sight to see large numbers of clams shooting columns of water into the air, thereby forcibly expelling accumulated sediment and waste-food matter which might cause irritation to the animal during the hours of enforced closure.



T. C. Roughley

The emerald-green waters of the lagoon sparkle like champagne and act as an exhilarating tonic on jaded nerves. Lassitude, depression, all the cares of life vanish in this magic pool

BÊCHE-DE-MER

Equally conspicuous because of their great abundance, though far from beautiful, are the bêche-de-mer or sea-slugs which abound everywhere in the lagoon. Though bêche-de-mer are completely devoid of beauty they are in many ways amongst the most interesting animals on the reef. Several varieties are capable of secreting an abundance of white threads which are extraordinarily sticky; this I know to my cost for I once got my hands tangled up in them; all efforts to remove them from one hand left them adherent to the other. Just what purpose these threads serve is not known with certainty, though it has been conjectured that they entangle and confuse such foes as may molest the slugs.

Another extraordinary faculty possessed by bêche-de-mer is that of evisceration; if roughly handled they are prone to extrude the whole of their internal organs. These are lost for good, but the animal is capable of regenerating a completely new set.

In one or two species of bêche-de-mer it is not uncommon to find a small eel-like fish, known as *Fierasfer*, sheltering in its interior; the fish backs into the hind end of the bêche-de-mer's gut but has to come out to feed.

ALCYONARIANS

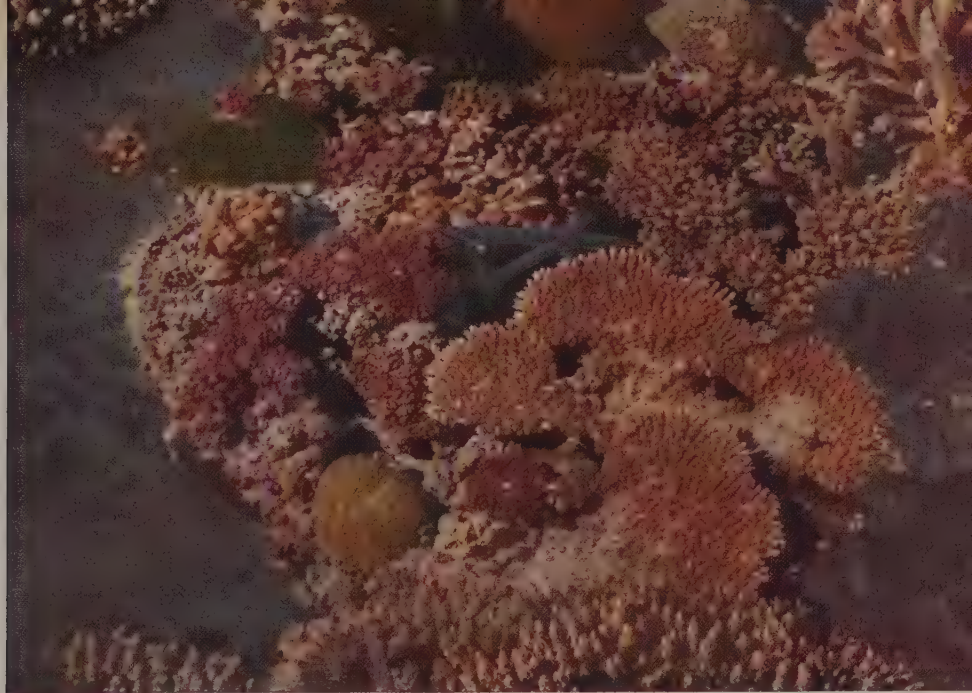
Quite a considerable proportion of the life of the Great Barrier Reef is made up of Alcyonarian corals which are usually of a leathery consistency and therefore frequently referred to as 'soft' corals to distinguish them from their harder relatives. They are closely related to the hard corals and resemble them in their minute structure but they have not the faculty of secreting lime, and their individual polyps are provided with eight pinnate tentacles as against six which characterize the hard corals. They vary greatly in form and some of the smaller ones are distinctly beautiful, though many of the larger ones repel rather than attract; indeed, some of

them resemble giant warty or cancerous outgrowths on the reef. The commonest forms are usually green, yellow or brown in colour; the expansive surface is finely pitted and leathery with the edges folded and convoluted or produced into finger-like processes. The visitor sees them, however, only in the daytime when the animal is quiescent, but at night the whole of the animal is covered with extended polyps, each bearing eight feathery tentacles which serve to catch the food, and then its whole aspect is changed. Under these conditions most of the soft corals are very beautiful.

THE 'FLOWERS' OF THE REEF

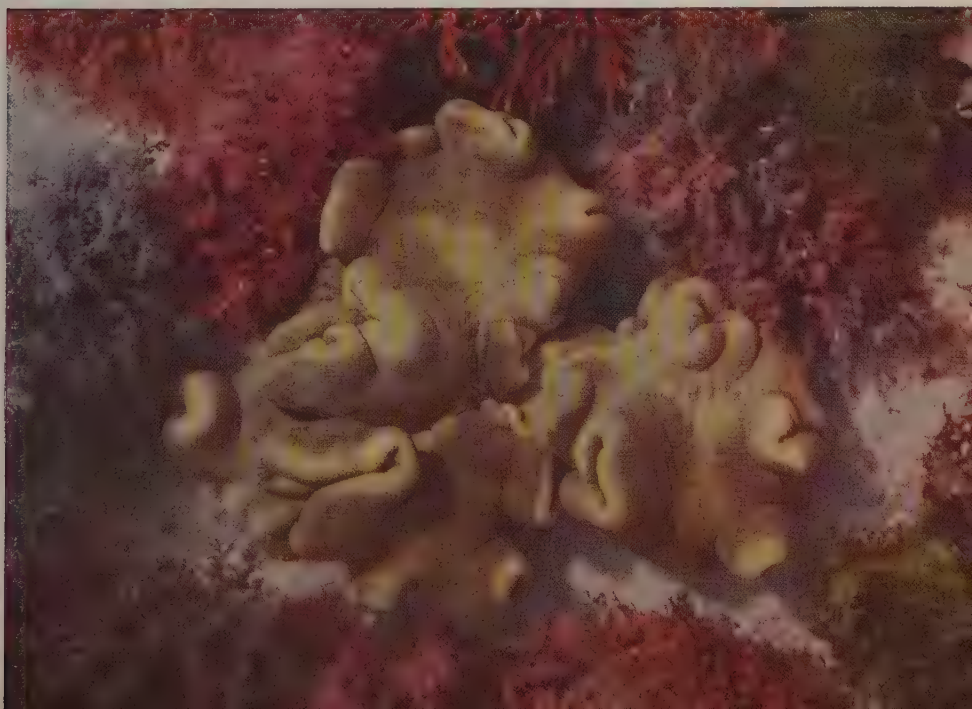
Amongst the most beautiful animals of the reef are the sea-anemones, which may grow larger than a dinner plate; they are for the most part shy creatures and hide in hollows and crevices amongst the corals. Many of them resemble plants rather than animals and some bear a close resemblance to chrysanthemums or cactus dahlias, though the petals of the flowers are replaced by tentacles which by their stings can kill or paralyse the small animals on which they feed. The tentacles pass the stunned prey from one to the other, working it to the centrally situated mouth, where it is engulfed and passed into the capacious stomach. Digestion completed, the waste matter is passed out through the same aperture and conveyed by the tentacles to the outer edge where it is dropped off and carried away by the current. Many of the anemones are brilliantly coloured with blue, purple, green, pink or combinations of those colours, and others may be found of a delicate yellow or pale cream.

In intimate association with many of the larger anemones are frequently found small fish, of a most conspicuous colouration, varying from a brilliant scarlet to black with one or two pale blue or white bands crossing the body vertically. These fish are rarely if ever found far away from an anemone and hence have received the



Natural Colour photographs by L. C. K.

Coral, of which the Great Barrier Reef is formed, provides a background of colouring—restful tints of lavender and reddish-brown—where the living polyps are still at work under water, raising on stems of lime their infinitely varied shrubberies. (Above) Living coral exposed by a low tide. (Below), Seaweeds surrounding a leathery Alcyonarian coral, ‘soft’ because it cannot secrete lime





Among the most beautiful animals of the Reef are sea-anemones, shy creatures that hide in hollows and crevices; some closely resemble chrysanthemums or cactus dahlias. The petal-like tentacles kill or paralyse small animals for food and work them gradually to the centrally situated mouth





Contrasting strongly with the anemones, soft as thistledown, are the hard-skinned starfishes of every shape, size and hue; and the clams with mantles of many colours, lining serrated jaws that, in the largest specimens, are reputed to have proved a death-trap to unwary divers

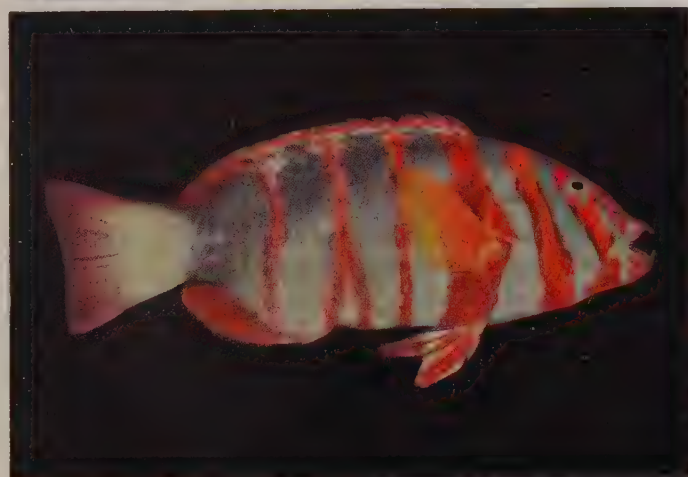




Crabs, small and large, abound everywhere on the Reef: a little coral crab whose claws are heavier than the rest of his body



Living shellfish display beauties unknown to the collector of dead shells. The much-prized 'tiger cowrie' spreads about it a tentacled mantle that here almost covers the shell



But of all the Reef's inhabitants, those that lend the greatest variety of colour to its coral gardens are the fish that swim proudly among them, adorned by Nature with lavish prodigality. The Red-Banded Coral Fish

name of 'anemone fish'. They are continually swimming amongst the anemone's tentacles or snuggling in its folds, lovingly caressing or caressed. When frightened they may force their way through the mouth into the anemone's stomach.

STARFISH

A common object of interest along the whole length of the Great Barrier Reef is a starfish (*Linckia* sp.) conspicuous both from its size and its beautiful blue colour; it varies from about nine inches to a foot in diameter, its five long arms radiating outwards from a small central disc. I have never seen a small specimen of this species, and I can only assume that it proceeds to deeper water to breed, the young remaining there till they mature.

Starfishes of all shapes, sizes and colours abound everywhere; some are provided with long, slender arms and others have no arms at all, the disc reaching enormous proportions and a weight of five or six pounds. The latter are finely mottled and spotted and are frequently known as 'pin-cushion' starfish.

Close relatives of the starfish, the brittle-stars have to be sought for by turning over coral boulders. Springing abruptly from a small pentagonal central disc are five long sinuous arms, each moving snake-like as the animal endeavours to make for cover. Grasp one of the arms and you will find it wriggling in your hand, the animal having severed it, or the portion you are grasping, from the rest of its body. So ready is the animal to discard its several arms that it is difficult to collect it intact.

SOME CURIOUS CRABS

Crabs abound everywhere. Sand-crabs, which spend most of their time out of the water, can be seen scuttling along the beach at night hastening for the protection of their burrows; variegated rock crabs hide under every boulder between tide-marks; and scores of varieties move amongst the

coral in the lagoon. Although some are very beautiful, the chief interest of most of them lies in their peculiar habits. Hermit crabs are extraordinarily prolific. On one of the islands of the reef I was once collecting shells on the shore, where they lay in millions about a foot deep, and leaving my collection on the sand above high-tide mark for about half an hour I was astonished to find on my return that fully 20 per cent of them had crawled away. They were dead shells, but they formed the temporary abode of crabs, which, on account of the softness of the hinder portions of their bodies, seek empty shells to conceal and protect their nakedness. As the crab grows it finds its quarters becoming uncomfortably restricted and it must perforce find a more commodious home; it therefore searches for a larger shell, when it leaves the old one and backs into the new.

While most of the hermit crabs are comparatively small, one occasionally comes upon a giant of the tribe. The largest occur in bailer shells, which may be found as big as a football; these crabs, bright red in colour with pale blue spots, must be handled with care, for they have a powerful nipper which can inflict a nasty wound.

Not satisfied with the protection afforded by the borrowed shell of a mollusc, one species of crab transfers to the outside of the shell one or more anemones which, on account of their stinging properties, are avoided by all the other inhabitants of the reef. It spends its life as a recluse in an armoured car. The anemone does not mind, for it obtains the advantage of a continual change of feeding-ground and comes in for the scraps that flow away as the crab tears its prey to pieces.

Another crab, provided with a naturally hard shell and therefore saved the trouble of seeking the protection of the shell of a mollusc, plants an anemone direct on its back and then offers defiance to all and sundry.



Variations of form within the same coral group are infinite. Two widely dissimilar specimens of the genus Acropora



A bank of coral. The largest of the round 'blooms', brilliant rose-pink in colour, inhabit the lowest level of tide-exposed reefs



With its spreading bronze-green, yellow-tipped 'frond' this platform coral strongly resembles a floating water-lily. It is found in large masses at Heron Island

With perhaps less cunning but with equal effectiveness, other species of crabs attach seaweed or sponges to fine, hooked hairs on their backs, and thus camouflaged they are effectively concealed from their foes.

The gall-forming crab has the faculty of regulating the growth of coral immediately around it for its protection. Taking up its position between the growing branches of staghorn coral, in some extraordinary way it disposes the growth of coral in its vicinity in such a manner that a pocket is formed with but a tiny entrance, far too small for the crab itself to pass through. In other words it deliberately imprisons itself in the growing coral. But these prisons are invariably found in possession of the female of the species only, though the opening is large enough for the entrance of the male. The reader is left to speculate whether this idea originated with the male or the female.

A PAINTED LOBSTER

Lobsters are renowned for their utility rather than for their beauty. The Barrier Reef lobster, however, not to be outdone by the surrounding galaxy of colour, has assumed such a beautiful livery that it has come to be referred to as the 'painted' lobster. Its body is a rich purplish-blue varied with pinks and mauves, and spotted with white; the antennae and legs are a rich bluish-black with white stripes; and the tail is a brick-red. Seemingly sensitive about its conspicuousness, it hides in crevices in coral pools in the daytime and comes out to forage at night. It grows to a large size and its flesh is delicious.

MANTIS PRAWNS

Another though smaller crustacean that is abundant throughout the whole length of the reef is the mantis prawn, which may occasionally be found eight or nine inches long but is usually about half that size. It swims with great rapidity and when approached dashes for the cover of the coral

or enters a deep burrow which it has constructed in the sand. The most remarkable feature of the mantis prawn is the pair of well-developed nippers which it extends after the manner of the praying mantis; these are extremely formidable weapons, terminating in sharp recurved points; they can move with lightning-like rapidity, and they open and close like the blades of a pocket-knife. The power of these pincers is remarkable; once when I was prodding a specimen in captivity with a glass rod the pincers shot out with such force that the rod was knocked from my hand. The colour of the mantis prawn is usually drab, dark brown or black, but some specimens are very beautiful, the nippers frequently displaying lovely colours.

SEA-URCHINS

Everywhere along the reef also are sea-urchins, encased in hard spherical tests and armed with movable spines which afford them abundant protection. One species, with spines as long as knitting needles and as sharp as sewing needles, is a sociable creature and is rarely found singly; as many as fifty may be found herded together in a pool. Above all reef animals it is free from molestation and to remove one from a pool without injury to the fingers is almost impossible, for the spines penetrate the skin and break off in the flesh.

Another species of sea-urchin, covered with thick spines of a pleasing fawn colour tipped with red and traversed by white bands, has earned the popular name of 'slate-pencil' urchin. It is at once the most beautiful and the most extraordinary of the Barrier Reef urchins. The spines fit into a ball-and-socket joint and can be moved by the animal at will in any direction.

SHELLFISH

In any survey of the animal life of the Barrier Reef, no matter how brief, the extraordinary shellfish life cannot be over-



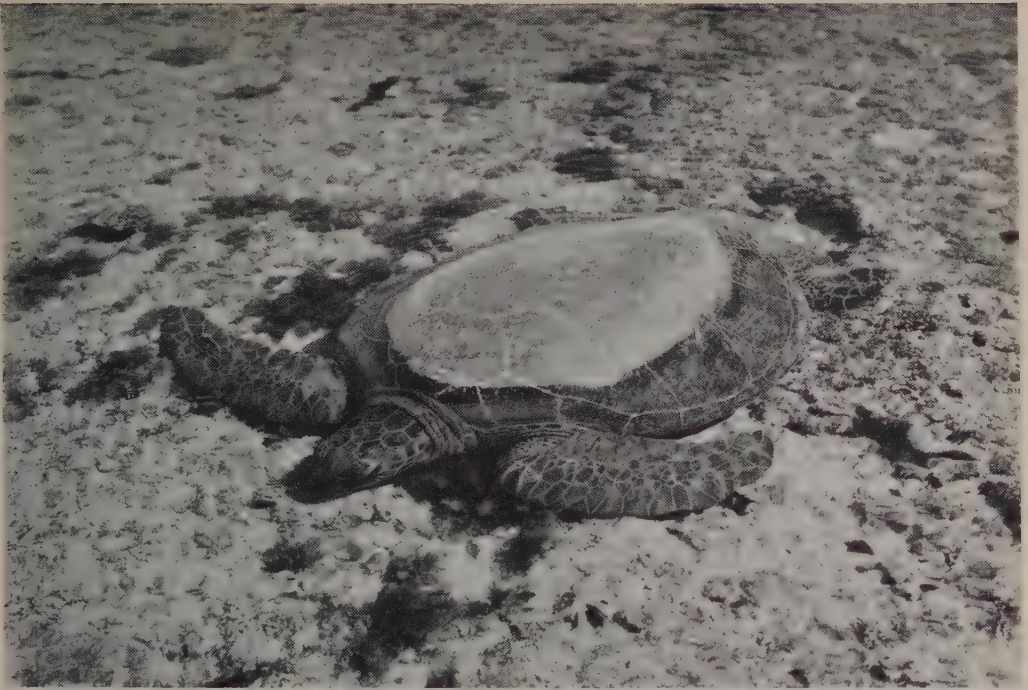
T. C. Roughley

The beautiful Nudibranch, a mollusc without a shell, swims with a flowing, undulating motion like a ballet dancer in a richly coloured cloak—

—and the prolific bêche-de-mer is to be seen every few yards conspicuous against the white sand. Some species are able to entangle and confuse assailants by exuding sticky threads



Dorien Leigh



T. C. Roughley

Dorien Leigh

The Green Turtle provides that epicure's delight — turtle soup. Here one is seen basking in a clear coral pool with only part of its shell—the light area—exposed



Armed with barbed, needle-sharp spines a foot long, this sea-urchin is freest from molestation of all reef animals and is one of the most sociable, clusters of fifty or more being found in a single pool

looked. On many of the beaches dead shells of diverse shapes, patterns and colours may be found in untold millions. But most of these are quite small, and it is the larger, living shellfish abundantly distributed everywhere along the reef that awaken the keenest interest of the lover of Nature. Enormous quantities of these shells have been collected for ornamental purposes; the shells of the giant clam for garden decoration, and those of the large cowries, spider shells, nautilus, and a host of others for use as drawing-room ornaments, to which their pleasing shapes, their delicate colours and their rich glaze eminently adapt them. But after all the shells are but the skeletons of the animals and interest in them is confined to their decorative qualities. On the reef, however, where the animals can be seen alive, the interest they arouse is of a far wider character.

The tiger cowrie is one of the most beautiful of all shells and is very variable in its coloration; rounded spots of dark brown or green with soft outlines are distributed irregularly over a surface which varies from an ivory white to the palest of brown or green. These cowries are commonly picked up alive, the animal lying snug within the toothed aperture extending along the under-surface of the shell, but occasionally no shell at all is to be seen, for it is entirely hidden by a thin layer of mantle which the animal within has extended to cover the whole external surface of the shell. This mantle is beautifully mottled and is covered with long, bluntly pointed tentacles. Many species of cowries are to be found on the reef, and some display overlying mantles of great beauty, but they are usually retracted during the daytime and are unfolded at night when the animal slowly wanders forth to feed.

The large bailer shell, also called melon shell from its resemblance to a water melon, may attain a length of eighteen inches and it may house, or partially house, an animal two feet long. The projecting part of the

animal is the large muscular foot which is far too large to be received within the shell. By means of this foot the animal crawls slowly over the sand, or it may submerge and creep along beneath the surface, the only parts projecting above being portions of the shell and a long trunk-like syphon which draws water in to supply oxygen to the gills. The exterior of the shell of the bailer is yellow with two brown bands crossing it transversely, and internally the colour is a rich apricot. The name 'bailer' has been derived from the use made of the shell by the northern Australian aborigines and Torres Strait Islanders to bail their canoes.

Rivalling the bailer shell in size and of much more substantial build is the helmet or cameo shell which may often be found on the northern area of the reef. This and a similar species have been largely carved to provide the cameos of commerce.

The swimming shellfish *Pecten* and *Lima* are widely distributed; the mantle edges of the latter are fringed with pinkish-red tentacles which cannot be completely withdrawn into the shell when it closes.

There are curious forms of shellfish which paradoxically have no shell, and others whose shell is embodied in the flesh of the animal. The former are known as Nudibranchs (naked gills) or sea-slugs and the latter as sea-hares. Both are abundantly represented on the reef. Sea-slugs range up to nine or ten inches in length, and are amongst the most beautiful of all the reef inhabitants. In the one animal we may find the most gorgeous array of scarlet, blue, pink and yellow, and as it swims with a flowing, undulating motion it conveys the impression of a ballet dancer robed in a richly coloured cloak.

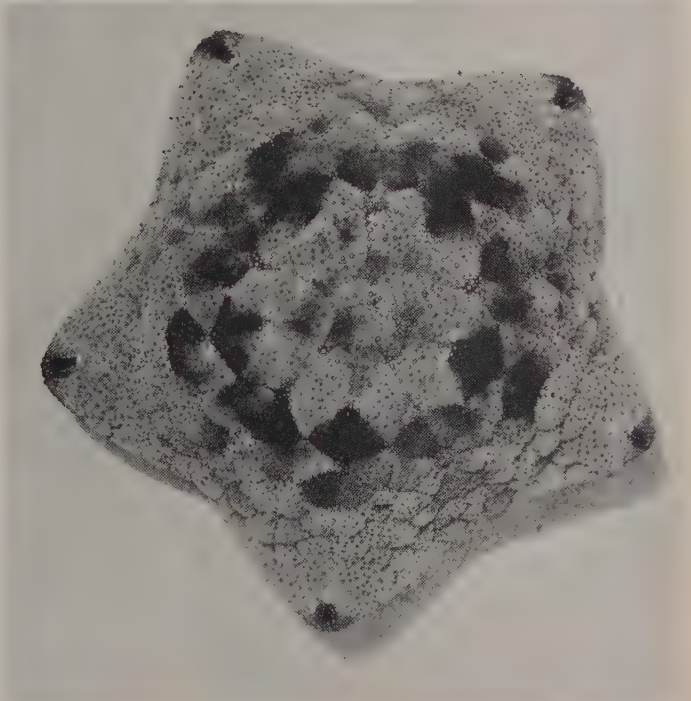
The sea-hares are everywhere to be seen crawling over the bottom on the reef flats; their chief interest to visitors lies in the abundant violet secretion which they pour out when disturbed; this colours the water for yards around and effectively obscures the animal.



T. C. Roughley

T. C. Roughley

The slate-pencil sea-urchin protects itself with blunt, hard spines, movable at will in ball-and-socket joints



Its arms reduced to mere triangular projections, the pin-cushion starfish may attain a diameter of over a foot and a weight of several pounds



Thiel Studios

The Porcupine-fish or Burr-fish. When threatened it inflates itself with air or water and faces its opponent with this formidable armature of erected spines

OYSTERS IN PROFUSION

The Great Barrier Reef is well stocked with oysters. The commonest, known as the sea-oyster, is a fine edible variety; its normal shape is triangular, but when it grows in an overcrowded condition it may become greatly attenuated and assume the shape of a banana. The Great Barrier Reef produces the world's largest oyster, which may weigh up to six or seven pounds; but perhaps the most curious oyster to be found there attaches itself by means of finger-like processes of the shell to branches of horny coral.

EDIBLE AND GAME FISH

Most of the edible fish of the Barrier Reef combine beauty with utility. Regal in their splendour, they have received names in keeping with their appearance. Red emperor, king snapper, duke, hussar, fusilier, epaulette fish, are some of the names bestowed on them. There is a

general impression that colder waters provide fish of better edible quality than warmer ones, but the fishes of the Great Barrier Reef would seem to disprove this, for amongst them are to be found some of the best edible fish in Australian waters.

The surface-swimming fishes give the angler his greatest thrills, for they are generally more powerful swimmers and more tenacious fighters than those that enjoy a lazy, peaceful life amongst the coral. Chief of them is the giant Spanish mackerel which may be found up to a hundred pounds in weight. When hooked it tears away in a blind fury, now leaping, now sounding, using every resource at its command to throw the hook, and the angler with light tackle has his skill tested to the utmost to land him. Great fighters also are the turrum, queenfish, tunny, pike and albacore, and an occasional swordfish, the ambition of all big-game anglers.

Rumanian Wedding

by SACHEVERELL SITWELL

Elsewhere in the present number Mr Tom Harrison lays bare the escape-mechanism provided for the British industrial worker on holiday. Such is the nemesis of industrialism, which leaves its victims deprived of the power and habit of self-expression. The England of our rustic ancestors was no paradise; but our rich inheritance of folk-tunes shows that they were able to express their holiday mood as naturally as do still the country folk of Rumania. The comparison of these two articles thus lends a nostalgic attraction to the scene so sympathetically depicted by Mr Sitwell, with his wide knowledge of European culture, and Mr Costa, whose skill and insight as a photographer are familiar to readers of The Geographical Magazine

It took us over an hour to do the last fifteen miles of the journey to Rucar owing to the congestion of the highway. We had already motored many miles through Transylvania and had been surprised by the excellence of nearly all the roads. But here they were being churned up by every sort of vehicle made since 1800. The majority were drawn by horses of one sort or another, some half broken, others very old and decrepit and a few really fine Oltenian ponies. The whole countryside had turned out, determined at all costs to attend the series of festivities culminating in tomorrow's wedding. For a wedding in this country is the excuse for at least forty-eight hours of incessant rejoicing. And this was no ordinary marriage: the daughter of a prosperous farmer was to wed an army officer. When we first heard of the bridegroom's profession gloom and disappointment settled on the party, for we assumed that, instead of a pageant even more colourful than those we had already seen, the military element would bring a bourgeois, urban atmosphere to mar the rustic gaieties to which we had looked forward. I hope that what follows will convey how wrong we were in coming to such a conclusion.

Sunday is the great day for weddings in Rumania, for then everyone dresses up in his or her very best and it is not unusual to find the entire population of a village gathered on the green, and not a single person but is dressed in native costume. The effect is most beautiful, for in spite of

the fact that each province has its own particular dress a great deal of white with multi-coloured gold and silver sequin trimming is usually worn, and, while in some places the costumes are more beautiful than in others, the massed grouping of these brightly clad figures is always a joy to see, particularly in the Bucovina, where the light has a strange clear translucence such as is only found elsewhere at a great height. Flowers are used almost universally; the girls wear long shiny plaits and a geranium or zinnia, the brightest to be found, tucked behind the ear, for in most provinces only a married woman is expected to cover her head, though the younger ones are sometimes to be seen with wreaths. These wreaths, picked from cottage gardens, are usually worn by a bride and distinguish her from her less fortunate sisters.

As a race these people are not beautiful,





To the wedding come guests from villages for miles around, the stalwart tillers of a rich soil, attired in their traditional Sunday best

Most of the men wear the same narrow, white, clinging trousers and long, loose-sleeved tunics made of coarse linen and belted with a cummerbund, as well as a short, sleeveless jacket

All photographs by A. Costa





Brilliant variety is lent to the native costumes by the colours of the women's skirts and kerchiefs and by the embroidery both on their blouses and tunics and on the men's jackets

with their swarthy and often florid skins and heavy black eyebrows, but they have the strong, healthy, buxom look, clear black eyes and graceful carriage which are bred in the deep soil they till. They are indolent and good humoured, perhaps because so little effort is required to make a living. Three crops a year flourish beneath that ardent sun and the rain seems to confine itself to a set period in the winter when it is really required. They say it is potentially the richest country in Europe, but this peasant population is unambitious, so that, content with but little, they need not do more than a minimum of work.

Through the ever-increasing crowd of riders, drivers and pedestrians we eventually arrived in Rucar and got to the house where we had been invited to spend the night. Here we were to enjoy typically genuine Rumanian hospitality. Our host and his wife, whose dowry included this charming house, garden and surrounding farmland, greeted us in the courtyard wearing their peasant clothes. She, in a long white cotton, embroidered tunic with full sleeves, covered from waist to hem by a scarlet overskirt pulled tightly round the hips and swirling out into a twinkling, sequin-studded frill, held in place by a breathlessly tight red silk cummerbund. A gay silk handkerchief covering her black hair denoted that she was a married woman. Two other ladies accompanied her; one looked about thirty-five and the other in early middle age, and it was a great surprise to find that they were mother and grandmother of the mistress of the house, until one was reminded that in this part of eastern Europe girls still marry at thirteen or fourteen years of age.

The building itself had two storeys, a roof of wooden shingles and wooden balconies. It was white-washed inside and out and on the floors lay the charming rugs for which this province is particularly famous; dyed sheepskins, which are also used as blankets and bed-covers, and beautiful, gaily coloured Oltenian and Bessarabian carpets.

It was soon dark and we were given strangely shaped, long-necked glasses, filled with *Tuica*, the delicious Rumanian schnapps, accompanied by squares of cheese preserved in pine bark, which has a delightful, pungent, tarry taste, and slices of salted sturgeon on black bread. Stimulated by this *hors-d'œuvre*, the ladies of the party felt equal to the pleasant task of adorning themselves in the native dresses provided for them. Variations on what I have described above, one had a black skirt, one a blue, and the third a different shade of red, with the addition of long transparent lawn scarves to drape over the handkerchief which tightly concealed their hair.

At about nine o'clock dinner was ready, comparatively early for here, where the afternoon siesta lengthens the day and the evening meal is never prepared until late. The men crossed the garden courtyard carrying torches to light the ladies to the living-room, where a huge tile stove filled with glowing logs produced a welcome heat, a delicious piny smell and a not unpleasant faint blue haze of smoke. Down one side of the room stood a groaning sideboard, and on the other a long oak refectory table where all were soon seated devouring caviare from Valcov; *moussaka*, a dish of mincemeat, rice and aubergine; chicken pancakes; and the sour cream which is served with every dish. The local wines were as good as the food, though quite different from the Hungarian and Crimean vintages which they rival.

At eleven we decided it was time to go on to the wedding dance which was being held in the village hall. We were early, and at first disappointed to find a mere handful of people, some of whom were wearing ordinary clothes, so that the scene recalled any village dance in England. Soon, however, the place began to fill up, and before long it was packed with guests attired in costumes which represented every village for miles around. Finally appeared the bride-to-be escorted by her parents,

and the bridegroom with his best man. There was a gasp of disillusionment from our party, and the worst fears were confirmed by the fact that he was wearing military uniform, while she wore a frilly pink taffeta frock which suggested Birmingham. It was explained that this unpleasing custom now prevailed, and, as the eye grew accustomed, its very incongruity seemed to emphasize the picturesqueness of the rest of the crowd. Indeed, the details of the bridegroom's uniform, to say nothing of his pomade and powder, were perhaps the most outlandish sartorial features of the gathering.

The *Hora* now began, slowly and discreetly at first, then working up by 1.30 to a climax of frenzied dancing: two or three link hands, and, with a variety of complicated shuffling steps, growing faster and faster, circle round the room beckoning and ogling to others in the crowd who break the chain and join in. As the pace increases the dancers gain impetus instead of tiring, and the band, intoxicated by their own efforts, put renewed energy into the lilting gypsy rhythms which all Rumanians know almost instinctively and which have been made familiar to a wider audience by Enescu, that distinguished Rumanian composer, better known, perhaps, as master of the violinist, Yehudi Menuhin. Not one of the musicians can read music, but the traditional tunes are as much a part of their lives as the strange-sounding words they accompany. Now and then there is a brief pause spent in drinking beer and *Tuica*; but so insistent and infectious has been this music that it lingers in the ears, and one hardly knows whether it is actually going on or merely ringing in the head. There is no indication of passing time, no sign of fatigue among the frenzied dancers, until some Philistine in our party announces that it is five o'clock and that, if we are to enjoy the rest of the festivities, a few hours' sleep might revive fresh enthusiasm.

By midday the scene had shifted to the courtyard of the bride's home. Had there

been no interval of rest for these indefatigable revellers? Few of them are dancing now, but whispered curiosity is evident on all sides. There will be hours to wait before the happy couple appear, but meanwhile every detail is of interest, so that each new arrival is stared at and followed from the gates to the door. The more important wedding guests are beginning to arrive and the variety and beauty of the women's dresses are astonishing. Most of the men, however, wear the same narrow, white, clinging trousers and long, loose-sleeved tunic made of coarse linen and belted with a cummerbund. The effect of this costume, with its background of crowded buildings teeming with humanity



Rumanian hospitality included the provision of native dresses for the foreign visitors, who were thus helped to share the spirit of the occasion



The Hora, Rumania's national dance, supplies a continuous undercurrent to the festivities. Circles of dancers are incessantly forming, breaking up and re-forming as fresh guests arrive to add fuel to an enthusiasm that shows no sign of flagging for at least forty-eight hours



Mothers and aunts are, on the whole, content to vary the constant flow of reminiscence and gossip with occasional excursions into the company of dancers; young girls, however, find every moment irksome when they are unable to keep their long, shiny plaits on the move





The chief violinist and his second, whose tireless bows set the tempo of the wedding feast with the lilting rhythms of Rumania's traditional folk-tunes

and farmyard animals, recalls Brueghel in his most inventive pictures.

Some hours later things were much the same, except that the Hora had started again in earnest and the balconies were now overflowing. The band had transferred itself to a point of vantage here and the musicians, for no particular reason, had put on a sort of military uniform. The bride's mother and father were collecting the more distinguished visitors and leading them indoors for refreshment, an honour we were pressed to share, sitting on divans covered with sheepskin rugs in a large room decorated with garish, stencilled

wallpaper and horribly ugly oleographs. Each person was offered a large spoonful of sickeningly sweet jam to be rapidly washed down with iced water and followed by glasses of red or white wine in which many toasts were drunk. The bride's mother looked magnificent, covered in embroidery, sequins and massive gold jewellery. There could be no doubt about the family prosperity, for she had an entire row of gold teeth, a deplorable but much-vaunted sign of wealth among these people. Her husband could not believe that we were unable to speak his language, and continued, in spite of much shaking of heads and other

negative gestures, to engage the foreigners in endless Rumanian conversation.

This ceremony over, the focus of activity returned to the courtyard, where grunting klaxons and shrieking brakes announced the arrival of a convoy of rather decrepit motors containing several officers wearing the most highly coloured military uniforms imaginable. No two were alike, but all were festooned in gold braid, medals, frogging, fur and every sort of embellishment. Each carried a bouquet of variegated dahlias and, by unanimous consent among our party, the palm for fantasy was given to the one who was dressed in sky blue, trimmed lavishly with galloon and astrakhan. The bridegroom himself looked very handsome and was not unconscious of the fact. He greatly resembled the present Prince of Piedmont, and wore his regalia with an air.

Whoops of welcome greeted their arrival, and it was now time for the local photographer to make his presence felt; a round, pompous little man with a pink face gradually turning to blazing purple in the heat of his efforts. It was amazing to find that such a stentorian voice could be contained in this comparatively small frame, but even so he had the greatest difficulty in making himself heard above the din which accompanied the arduous task he had set himself for the ensuing hours.

This determination, at all costs to take an endless series of wedding groups, posed to the minutest detail in what he conceived to be an artistic manner, involved him in such a performance of shouting, antics and gesticulation that it was impossible to control the helpless laughter his performance inspired. The camera was shifted here and there by his assistants, mowing down women and children in its relentless pursuit of the groomsmen, until a quantity of pictures had been secured to immortalize a series of writhing poses which the subjects took trouble to make as fantastic as possible.

It took the bridegroom half an hour,

after this was over, to make his way to the house, besieged by well-wishers shaking his hands and clapping him on the back. At last he and his male attendants disappeared indoors, to emerge at length paired off with the bridesmaids. Nor were they in peasant costume, but wore instead modern dresses, reminiscent of the bride's ball dress of last night: yards of pink, blue and pale green taffeta, tulle and ribbon, rustled their way self-consciously down the steps, while a great deal of tittering and arch glances, arranging of flounces and smoothing of hair, preluded the overtures of the photographer.

Our friend in light blue and astrakhan had, with unexpected humour, carefully chosen the one really ugly girl from the bevy as partner, and this potential flirtation, which now became a feature of the proceedings, added not a little to the general enjoyment. She had a complete double row of gold teeth, so that it was possible that his blandishments had a worldly as well as a humorous inspiration.

The ushers now had a young woman on one arm and a large wicker basket filled with both real and artificial *pièces montées* of gaudy flowers on the other. The effect of these burdens, which interfered with their carefully tilted and elaborate headgear, helmets, peaked caps or *képis*, detracted somewhat from the pompous aspect manifested previously, but the whole performance was accelerating in preparation for the crescendo so long impending.

Would she never come? Yes, the great moment had arrived, and, after a brief hush, followed by a fanfare from the orchestra and resounding cheers on all sides, the bride appeared at the top of the stairs, leaning on the arm of her already exhausted fiancé. Her appearance now was that of a young woman about to be married in a large provincial town in any European country, only that it must be described as unusually 'chic'. One concession to her native customs had been allowed—a streamer of silver fringes, for good luck,



In the courtyard of the bride's home, now packed to overflowing, space is with difficulty cleared for the elaborate and prolonged activities—



—of the local photographer, who arranges his unruly material into a series of wedding groups, posed to the minutest detail, by means of stentorian shouting and frantic gesticulation



Bride, bridegroom, parents, godparents, bridesmaids, groomsmen, have all been immortalized ere the photographic impresario considers that his work is completed

hung from shoulder to hem. Her face was very obviously made up, but in this respect provided a contrast to most of her friends, though the same cannot be said of her retinue, either male or female.

She now had even greater difficulty in reaching what should have been the space allotted for the climax of photography than had her husband-to-be in achieving his entry to the house. After being more or less mobbed by enthusiasts it was clear that she was a match even for the indefatigably persistent camera artist. There was no denying that her temper suffered and that her views on posing were as indomitable as his. No sooner had they agreed on the position of the bouquet than an argument broke out about the arrangement of the veil or train. The final decisions and photography of the pair lasted an hour, and was but the prelude to a far longer and more elaborate performance when the entire party were arranged, rearranged, grouped and at long last photographed some twenty times to the vociferous satisfaction of their impresario.

But this work was not yet over and a race with the dwindling light spurred him to Herculean efforts. These were soon justified by the arrival of the most impressive guests of all, a quartet of the bride's godparents, sumptuously dressed in the finest costumes yet seen. The men's were a variation on those already described, only of richer material; but the two women vied with each other in effect. The first was a tall and striking woman of about forty, with auburn hair, fine features and the carriage of an Amazon. The embroidery on her tunic was the most lavish we had seen, and the sparkling paillettes of her skirt glistened in the fading glow of sunset. A veil of finest lawn draped her head and shoulders, falling almost to the ground at the back. Her younger companion was extremely good-looking; darkly exotic and made more oriental by the Eastern suggestion of her clothes, particularly a heavy saffron-yellow cloth coat

trimmed with black braid, embroidery and fringe, with long slashed sleeves which she allowed to hang loose at the sides. She wore this rich garment as a cloak, so that the soft patterned silk with which it was lined provided a flowered background for her lovely dress. Round her neck fell a long chain of huge lumpy amber beads, and golden jewels hung from her ears and enriched her fingers. This addition to the group was now the focus of all attention and they bore the gaping of the crowd with a dignity and poise which showed how accustomed they were to admiration.

But soon it would be quite dark, and the procession to the church, about half a mile away, began to form. It was led by the groomsmen and bridesmaids, next came the parents and godparents and then the bride and bridegroom, their carriages being followed by the surging multitude on foot. The curtain now falls for a short time while we find our way by a short cut, through winding back-streets of the village, to the church, so that the entrance of the bride, continuing to play the leading part in this drama, may not be missed.

The scene is well staged, for by the flame of torches and giant candles the crudeness of modern ecclesiastical *décor* is hardly noticed. We are only aware of faintly discernible painting on the walls, and these neo-Byzantine priests, so garish a few hours earlier, recede more and more into the shadows so that even the glaring stained-glass windows can pretend to be an ancient rainbow glow. The nave fills slowly, for of course there are no chairs in this place of worship, where the office differs only in language from Greek Orthodox. Each person, on entering, lights a candle to hold during the ceremony, and advances as near as possible to the Iconostasis. We have been fortunate in taking a position in the middle of the raised step in front of it, so that we can see the whole length of the aisle. There is an expectant murmur growing to loud applause, for this building is a theatre, and the centre of village life



The groomsmen, officers of the Rumanian army, each fully conscious that 'gold braid has a charm for the fair' and prepared with a bouquet to accompany the bridesmaids in the bridal procession

and entertainment. Meanwhile the bridal attendants, lined up as though preliminary to dancing Sir Roger de Coverley, form an archway, with those gaudy baskets held high above their heads.

Down this lane pass eventually the chief actors, the leading lady and her *jeune premier* clasping in both hands candles five feet high and proportionately thick. Three priests in gorgeous robes, gleaming with precious stones (for all illusions have become more and more convincing), appear

through the door in the gilded screen, their chasubles sweeping past the huge ikons which are so brightly silvered that they startle, even by this dim light.

But it is no longer so obscure, for the whole church is packed with people and as many tapers. The bride and bridegroom are flanked by their beautiful godmothers and meet the priests in front of the lectern. An hour of chanting, of question and answer, while now and then they stoop to kiss the ponderous bible, bound in bauble-



Heroine—and hero—of an arduous and memorable day

studded silver. We become half mesmerized by the music, the heat and the strange sea of upturned faces, their hundreds of eyes turned in this direction. Exhaustion is nearly reached and the bridegroom looks ten years older than when he made his first appearance last night, or was it a week ago? But we are nearing the end in this act, the golden crowns are now being held, triumphantly, over the heads of husband and wife and they are soon urged forth again to be borne away by the surging torchlit stream.

Our final and only tangible encounter comes at midnight, when we find ourselves once more in the village hall, our identities merged with these peasants, many of whose faces have become familiar so that it seems only natural to pay the universal tribute that the bride expects, and which she can understand, though ignorant of our language: and so we kiss her on either cheek and shake her husband's hand with heartfelt wishes that the rest of their life will be less arduous than this day, every moment of which we have shared with them.

PHOTOGRAPHIC NOTES

Edited by F. S. Smythe

13. COLOUR PHOTOGRAPHY (6)

In these notes last month we gave a short survey of a combination of two processes whereby a snapshot colour transparency can be turned into a colour paper print. In theory nothing is simpler than the making of

three separation negatives from a colour transparency, the preparation of positive reliefs and the final imbibition colour printing onto paper. In practice, however, a careful control of colour values is essential, because it is the dye colours in the transparency which have been photographed and not the colours of the original scene. Life-like as is the

dye image in Kodachrome, the fact remains that no dye is perfect—a perfect dye being defined as one which reflects all the light making up its colour and absorbing all the other light of the visible spectrum. The ideal dye of, say, a blue-green colour, would absorb all the light except the correct proportions of blue-green. The ideal magenta dye would absorb all the green light, but not the red or the blue-violet. An ideal yellow dye would absorb blue and violet light, but not the green or the red.

But no dyes have yet been devised which do not absorb an appreciable amount of the light of their own colour. Virtually all blue-green dyes absorb a certain amount of the blue-violet and green light, and all magenta dyes absorb some blue-violet light, although many of them have been so made that they absorb practically no red light. Some laboratories have made yellow dyes which are completely free from green and red absorption.

These imperfections in the composition of dyes do not affect the accuracy in colouring of the positive-transparency. It is only when

you come to photograph this transparency that the absorption of their own colours by the dyes will give rise to a poor colour effect in the final print. The blues and green of a print made directly from a Kodachrome

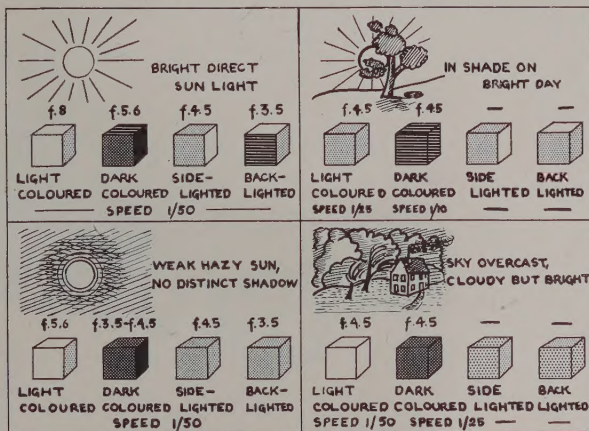
picture without what is known as 'colour correction' appear too dark. The colours are 'muddy' and contain a great deal of grey.

Colour correction in the wash-off relief process is carried out during the printing of the positive-transparencies. It is a complicated process which could be worked only by the highly-skilled amateur. It may be roughly de-

scribed as printing negatives super-imposed in register with a positive from another negative. A print from the red-filter-negative is super-imposed in register with the green-filter-negative when making the green-filter-positive—which is printed in magenta. 'Masking' in this way adds to the density of the amount of blue-green in the picture. It therefore detracts from the magenta positive in the same proportion. In the same way, the yellow-filter-positive is used as a 'mask' when printing a blue-filter-negative, while a red-filter-positive 'masks' a blue-green-positive so that all the tones of the picture have the same degree of 'contrast'.

In order to obtain Kodachrome positives of the best quality for the making of paper prints, the pictures should have strongly modelled high-lights without dense shadows. Lighting of the subject when taking Kodachrome pictures should, in fact, be soft and diffused.

The photographer should endeavour to avoid as much contrast as possible, remembering that colour will give him his contrast and not, as in black-and-white photography, light and shade.



Such an exposure guide as this (for Kodachrome) is a useful aid to the colour-photographer

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